156

CONTENTS

TRADE NAME	MODEL	SET AND FOLDER No.
Admiral	Ch. 21F1, 21G1, 21M1, 21N1, 21P1, 21Q1, Tel. Rec. Prod. Chg. Bul. 30	156-2
Arvin	582CFB, 582CFM (Ch. RE-310)	156-4
Dumont	RA-119A Tel. Rec.	156-5
Hallicrafters	17811-H, 17816, 17817, 17860-H, 17861-H Tel. Rec.	156-6
Jackson	DP-51	156-7
Mitchell	1256	156-8
Philco	52-940, 52-941, 52-942	156-9
RCA Victor	1R81 (Ch. RC-1102)	156-10
RCA Victor	7T111B (Ch. KCS47GF-2) Tel. Rec.	156-11
Silvertone	133 (Ch. 100.107 & Radio Ch. 100.043) Tel. Rec.	156-12
Stromberg-Carlson	321 Series Tel. Rec.	156-1A
Trav-Ler	16T Tel. Rec. Prod. Chg. Bul. 31	156-3
Trav-Ler	219-8, 219-8B Tel. Rec.	156-1A
Webster-Chicago	228 Recorder	156-13
Westinghouse	H652K20 (Ch. V-2194-2, -3) Tel. Rec. Prod. Chg. Bul. 31	156-3
Willys	677012	156-14
Zenith	H-401, G (Ch. 4H40)	156-15

The PHOTOFACT Servicer

January 1, 1952 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ Servicer 155-156

"A short answer seldom brings a long order". - Anon.

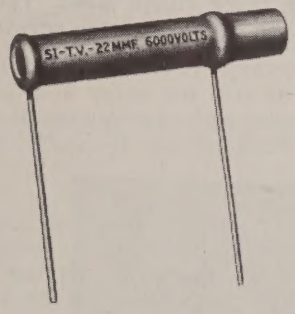
NEW PARTICIPANT

We are happy to announce that Jensen Industries, Inc., 329 So. Wood Street, Chicago 12, Illinois, manufacturers of phono needles, are now participants in the Howard W. Sams company activities. Manufacturing a complete line of phono needles, their products will be listed in Photofact Folders beginning with Set No. 155.

Aerovox Corporation Introduces
New Universal High Voltage
Tubular Ceramic Capacitors

Available in a 6,000 volt rating with eleven capacitor values, from 4.7 mmf. to 47 mmf., this addition to the Aerovox "Hi-Q" ceramics line simplifies stocking problems and yet assures adequate values for replacement.

Known as the Type SI-TV High Voltage Tubular Ceramic Capacitors, they are packed five to the carton. The unit is pictured herewith.



* * *

Jensen Industries Announce
New Cutting Needles

A new line of cutting needles has just been announced by Jensen Industries, well-known Chicago Phono Needle Manufacturer.

The needles are available in a range of prices from 50¢ to $7.25 with either steel or sapphire points.

According to Karl Jensen, Vice President, many years research have gone into this new needle in order to give the trade the finest cutting needles that it is possible to make. They are packaged six to a box.

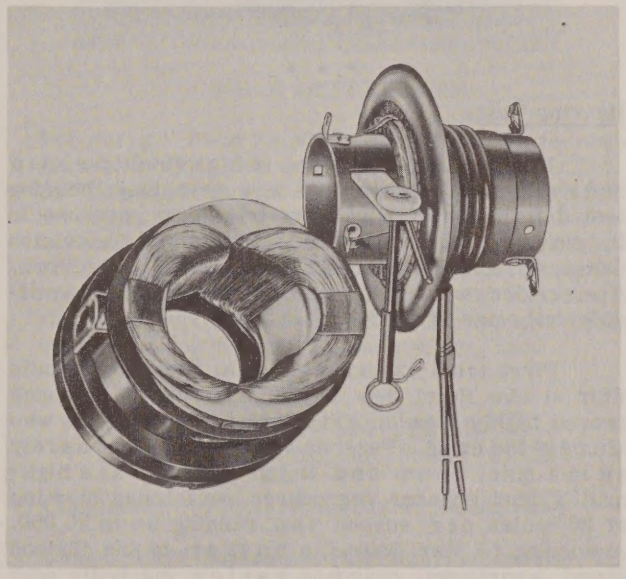
For additional information see your local distributor or write to Jensen Industries, Inc., 329 So. Wood Street, Chicago, 12, Illinois.

* * *

Stancor Adds Two
Television Replacement Components

Standard Transformer Corporation has just announced two items for direct drive horizontal deflection and high voltage circuits. Catalog No. A-8131 Horizontal Output and High Voltage Transformer, is the air core type heretofore introduced by RCA and may be used in many of the late RCA, Emerson and Capehart receivers.

The 70° deflection yoke designated as DY-10, has been developed for use with this transformer and has a cosine winding with a ferrite core. The horizontal inductance is 30 mh and the vertical inductance is 3.5 mh. Both items are pictured here and both are now available from your Stancor distributor.



* * *

Sylvania Electric Products Inc.,
Opens New Radio Type Plant

A new plant devoted to the manufacture of miniature radio tubes has just been opened in Shawnee, Oklhoma. Accompanying the official opening were two service meetings conducted by the Sylvania factory sales service engineering staff, plant tours for dealers and distributors, and open house and plant tours for other interested parties.

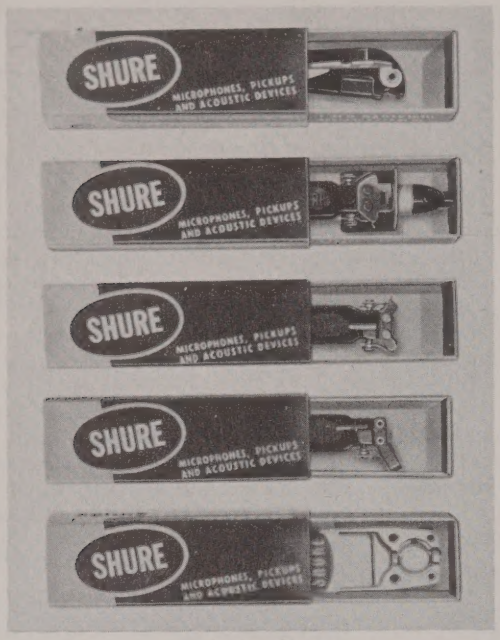
* * *

Shure Brothers Provide Individual
Colorful Carton for each Pickup Cartridge

The new container, shown below designed in the Shure colors of royal blue and red, provides an in-

dividual box with the cartridge mounted on a platform which contains the accessories inside it.

Model and stock numbers are printed on the end of the box which can be pushed out for inspection. The platform permits examination of the cartridge without spilling the accessories held securely in place within it.



* * *

Hearing Tests

Prospective purchasers of high-fidelity radio and phonograph systems can now have their hearing tested from the standpoint of frequency response in the sound studio of the Hudson Radio & Television Corp., 48 West 48th Street, new York 19, New York. The service, which takes about five minutes, is available daily free of charge.

First tried experimentally at the recent Audio Fair at the Hotel New Yorker, this hearing check proved highly popular with "hi-fi" enthusiasts who attended the event. Persons undergoing a test merely sit in a quiet room and listen carefully as a high-quality loud speaker reproduces pure tones starting at 20 cycles per second and running up to 20,000. According to Max Baume, manager of the Hudson sound department, response varies markedly with age, and women generally score better than men on high notes.

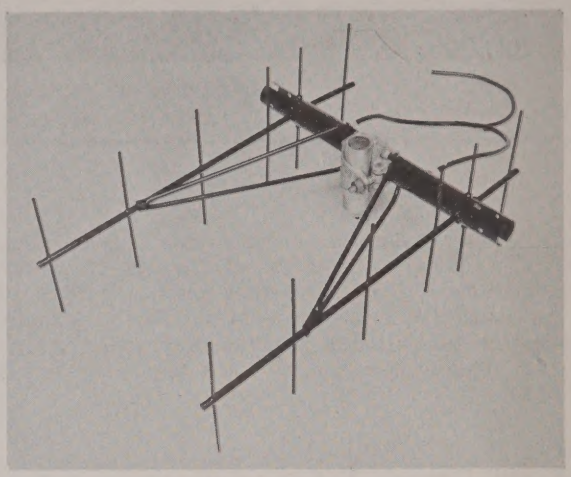
* * *

U. H. F. Antenna

Ward Products Corporation has designed and is presently manufacturing a new 12-element Yagi type antenna for the 450-470 mc. band. The model SPP-161, pictured herewith, has a gain of 11 Db and is vertically polarized for commercial communications.

A companion unit, the SPP-172, is a 24-element unit of similar construction and has a forward gain of 14.5 Db. Both units are supplied with matching harnesses for 52 ohms, and are provided for horizontal polarization where necessary.

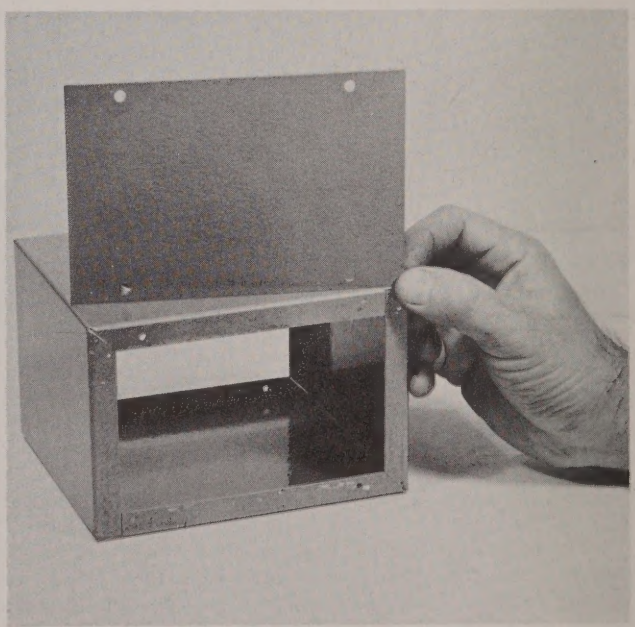
These units are designed primarily for point-to-point communications in the commercial field, but are shown here primarily to indicate the type of equipment which can be expected when the U. H. F. television bands become available.



* * *

Small Metal Cabinets

A new line of small metal utility cabinets, featuring removable front and back covers, is announced by the Insuline Corporation of America, 3602 - 35th Avenue, Long Island City 1, New York. Especially intended for amplifiers, monitors, test sets, control units, miniature receivers and transmitters, etc., the cabinets range in size from 4 x 2 x 4 inches to 12 x 11 x 8 inches, and are available in natural and gray aluminum and in black ripple steel. The covers are fastened by means of self-tapping screws, which are included.



* * *

NEW PUBLICATIONS

Sprague Publishes 4th Edition of TV Capacitor Manual

The 4th edition of the Sprague TV Replacement Capacitor Manual, just published, contains accurate, up-to-the-minute capacitor replacement data on a total of 1561 receiver models by 63 manufacturers.

Printed in dark brown ink to distinguish it from an earlier edition, it shows complete, set-by-set listings of original equipment capacitors and their recommended Sprague replacements. Rating data and manufacturer's part numbers are listed for the original capacitor, while Sprague catalog numbers and electrical specifications are given for the replacement unit. A condensed listing of all Sprague TV capacitors is also included in the manual.

A special section lists capacitor "Service Packages" which contain all the electrolytic capacitors necessary to service any particular brand of TV set. Sprague jobbers will supply these kits for over 22 of the most popular brands of TV receivers. Serviceman can thus purchase at one time a full stock of needed replacement capacitors for the sets they specialize in.

Free copies of the new manual, publication M-481, are available from local Sprague distributors, or may be obtained directly from Sprague Products, North Adams, Mass., on receipt of 10¢ to cover mailing and handling.

* * *

"Mettallic Rectifier Design and Application"
by Julian Loebenstein
of Radio Receptor Company, Inc.,

This authoritative article has just been released in booklet form. Totaling 16 pages and cover, and thoroughly illustrated with application photographs, drawings, diagrams and charts, the booklet reviews the background of metallic rectifiers and clarifies the various factors in their application to electronic circuits. It is of value not only to the service technician, but to the engineer with specialized experience in the field. There is also included a helpful glossary of terms.

"Metallic Rectifier Design and Application" is available free upon request to Radio Receptor Company, Inc., Seletron Rectifier Division, 251 West 19th Street, New York 11, New York.

* * *

DOOR KNOB HANGERS
IN EXCHANGE FOR SERVICE HINTS

Many of you have asked again about the availability of those business-getting door knob hangers.

As you know, there is a big space at the bottom of each one, in which to imprint your name, address and telephone number.

In addition to making these available at our cost, we are now offering to send 200 FREE in exchange for each service hint used in the pages of the Servicer. If you want to buy them our prices are as follows:

200 . . . . . $1.00
500 . . . . . $2.50
750 . . . . . $3.75
1000 . . . . . $5.00

Here is a chance to obtain some worth while promotional material in exchange for very little cost or effort.

* * *

Here's a contribution which we feel merits the $5.00 we offer for new ideas on "How to use PHOTOFACTS".

"Anytime we have occasion to notice a TV receiver, including those we sell and/or service, we make the following notes:

1. Owner's name.
2. Make and model of TV.
3. Number of Photofact set this TV Folder is in.

"We use a card file for this and file it in alphabetical order using the owners's last name.

"Anytime we have a service call to the owner's home, we can quickly find the Photofact Folder for his TV set and carry this folder on the service call. This saves a great deal of time and very often eliminates the necessity of returning to the shop for service information.

F. L. Hutchins
Radio Service Station
Lawrenceville, Georgia.

* * *

FIELD EXPERIENCES

For every "Field Experience" published, we issue a certificate good for one PHOTOFACT Folder Set, or 200 Door Knob Hnagers as described elsewhere in this Servicer. Since it is impossible to verify the accuracy of contributions we cannot be responsible for either the diagnosis made of the receiver trouble, or the results which will be obtained by following the suggested repair routine. All contributions become the property of Howard W. Sams & Co., Inc.

ZENITH Model H2438
Photofact Set No. 120, Folder No. 13

Complaint: No picture, no raster, sound okay.

Cause: R109 horizontal output screen resistor open.

Remedy: Replace with recommended unit.

Thomas H. Ellery
Ellery Radio Sales & Service
1661 Oakland
St. Clair, Michigan

* * *

WESTINGHOUSE Model H-164
Chassis V-2119-1
Photofact Set No. 36, Folder No. 28

Complaint: On several of these sets I have had the same trouble: FM weak, dead or intermittent.

Analysis and Repair: All parts checked okay and were well within the allowable tolerances. The trouble

is a short between the small shield on the center pin of the socket of the 7F8 (Item No. 1) and pin No. 4 of this same socket. The FM antenna coil (Item 134) and its trimmer capacitor (Item 58) are soldered to this pin No. 4. The short can be located with an ohmmeter and the remedy is to thoroughly clean the joint and resolder it.

When the above mentioned short is present, the volume on FM reception is greatly reduced and the set cannot be aligned.

Also I found in this same model that resoldering the socket ring to the chassis greatly improves FM reception.

H. L. Haskins
1127 Chicago Street
Green Bay, Wisconsin

* * *

FORD Models 8072(9MF)
Photofact Set No. 44, Folder No. 4
FORD Model M-1 (9BF)
Photofact Set No. 46, Folder No. 4

Complaint: Loud intermittent hum, noisy and microphonic.

Analysis and Repair: Both models have a ground-lug under one rivet of each tube socket of the five main tubes. In time, one or more works loose, causing a bad ground connection. Soldering each lug and tube socket directly to the chassis cleared the trouble in both cases. This has been done with a number of other makes of car radios with like results.

Leon G. Brown
Brown's Radio Service
State Bank Building
Coloma, Michigan

* * *

ANDREA Model CG-VK15
Photofact Set No. 103, Folder No. 4

Complaint: Oscillation on high frequency end of band.

Cause and Remedy: Re-dress the lead from the first video IF sound take-off coil to the ratio detector. This lead goes to the 100 K ohm resistor which returns to pin 2 of the 6AL5. Moving the lead at this point under the 6AL5 will stop the oscillation.

Max Kellman
Television Service Engineer
306 Garfield Place
Brooklyn 15, New York

* * *

GILFILLAN Model 66B
Photofact Set No. 37, Folder No. 15

Complaint: Low volume. Alignment brings it back to peak performance, but it will stay aligned for only a few hours.

Remedy: The fault was found to be in the second IF transformer. The filament dropping resistor (Item 41) is housed in an aluminum can mounted flat against this second IF transformer can. After about fifteen minutes of operation, both cans are too hot to touch. Relocating this resistor away from any of the tube circuits will clear the trouble. I found this same trouble in three receivers of this model and to a lesser extent on many of the other portables on the market. It is even present in some of the compact AC-DC type receivers where there isn't much air circulation.

Donald Anglin
Radio Hospital
Groom, Texas

* * *

TRAV-LER Model 63R50-A
Photofact Set No. 150, Folder 13

Complaint: High or low band is intermittent.

Analysis and Repair: This set uses a single 12AT7 tube in a continuous tuner circuit amplifying the high and low band switches. Try the following when a new 12AT7 doesn't clear up the trouble.

A variable capacitor mounted on top of the tuner tunes the printed circuit coil on the stator plates of the variable capacitor. Fading at either end of the TV band may be caused by poor contact to the printed circuit coil.

* * *

VIDEO PRODUCTS CORPORATION
630 Type Chassis

Complaint: Black vertical lines on left side of picture. Looks like Barkhausen oscillation.

Analysis and Repair: This set employs a width switch mounted on side of high voltage cage. When switch is placed in wide width position, these lines will disappear. Fault lies in a 470-ohm, 2-watt resistor in the width coil No. 2. Resistor burns out due to high RF current. Replace with a 600-ohm, 10-watt unit.

Editor's Note: Both above Experiences were contributed by:

Max Kellman, Service Manager
Ada's Radio & Television Stores
212 Fifth Avenue
Brooklyn, New York

* * *

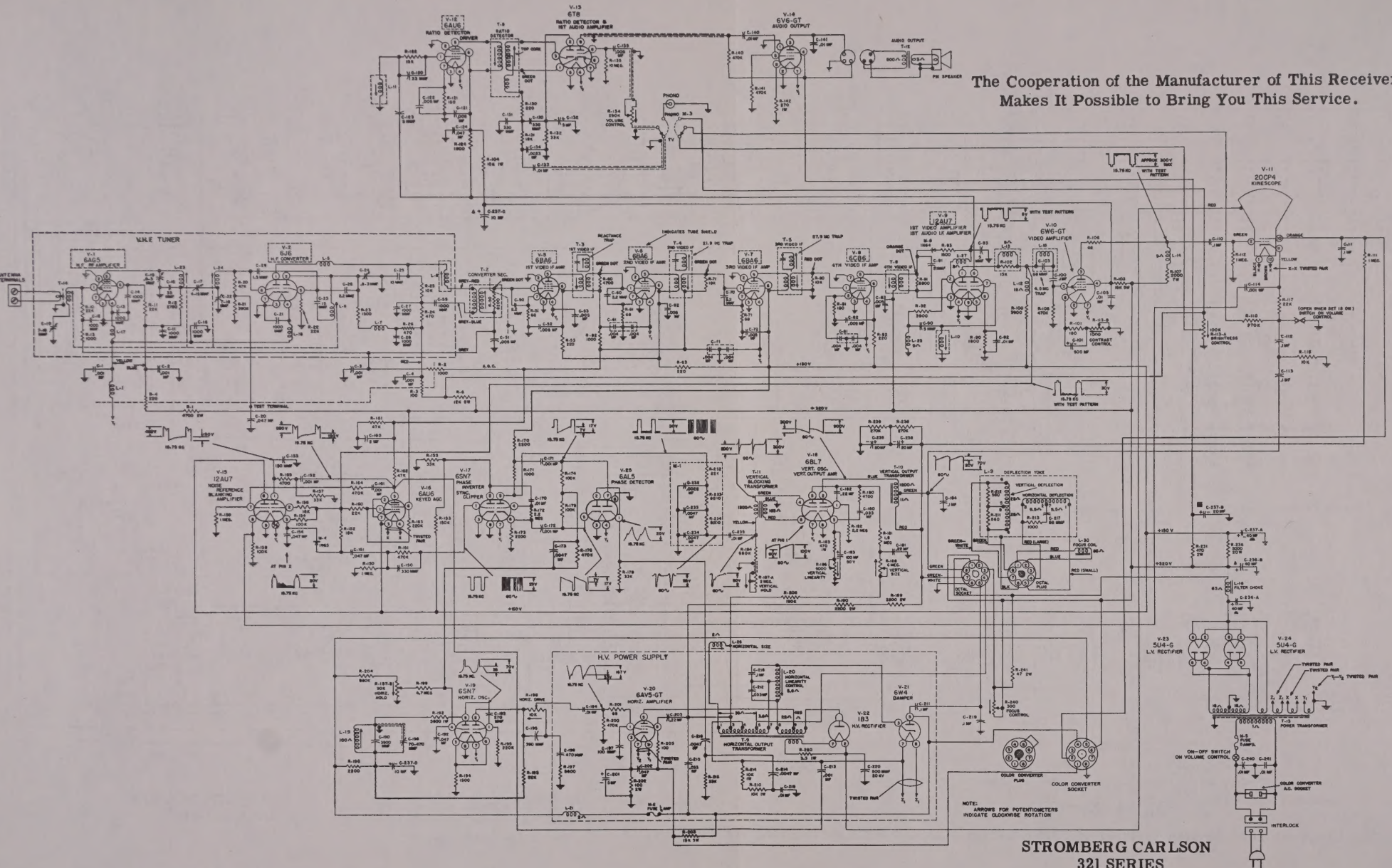
RCA Model 77U
Photofact Set No. 38, Folder No. 17

Complaint: Bad hum which sounds like an open grid or defective filter capacitor.

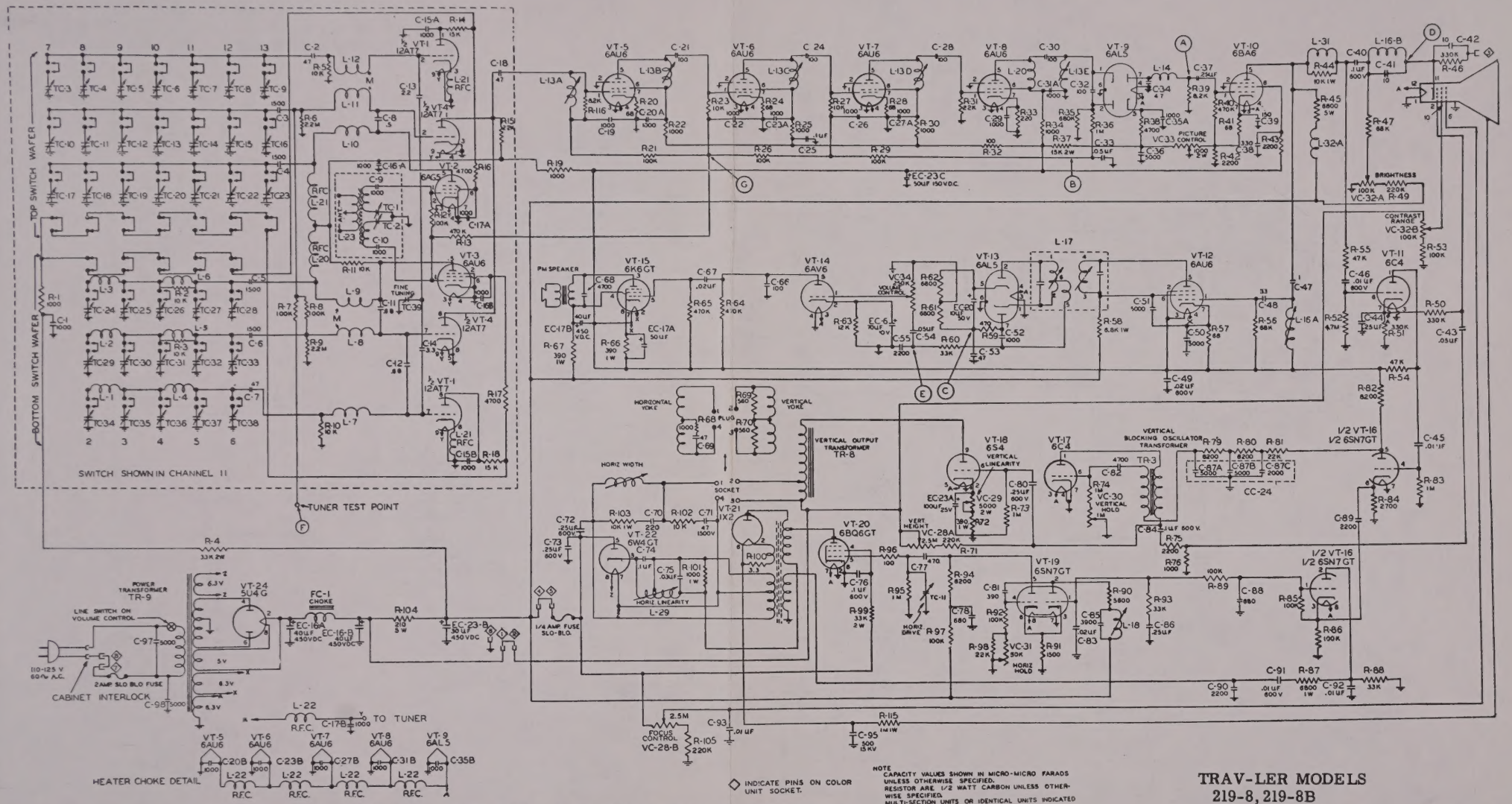
Analysis and Repair: After checking what I thought were probable sources of trouble, I found that the pilot light socket was defective, allowing a leakage to the chassis. Replacement of the socket repaired the receiver.

R. O. Bruner
Bruner's Radio Service
Old Riley Road, Route 4,
Terre Haute, Indiana

The Cooperation of the Manufacturer of This Receiver
Makes It Possible to Bring You This Service.



STROMBERG CARLSON
321 SERIES



◇ INDICATE PINS ON COLOR UNIT SOCKET.

NOTE
CAPACITY VALUES SHOWN IN MICRO-MICRO FARADS UNLESS OTHERWISE SPECIFIED.
RESISTOR ARE 1/2 WATT CARBON UNLESS OTHERWISE SPECIFIED.
MULTI-SECTION UNITS OR IDENTICAL UNITS INDICATED A,B,C, ETC.
M= MEGOHM. K=1000.
LAST CONDENSER = C-98 LAST RESISTOR = R-116

TRAV-LER MODELS
219-8, 219-8B

The Cooperation of the Manufacturer of This Receiver Makes It Possible to Bring You This Service.

PRELIMINARY DATA
The data contained in this folder is published in advance of regular PHOTOFACT Coverage

SET 156 FOLDER 1A

© Howard W. Sams & Co., Inc. 1952

PRODUCTION CHANGES
BULLETIN 30

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 2 IN SET 135

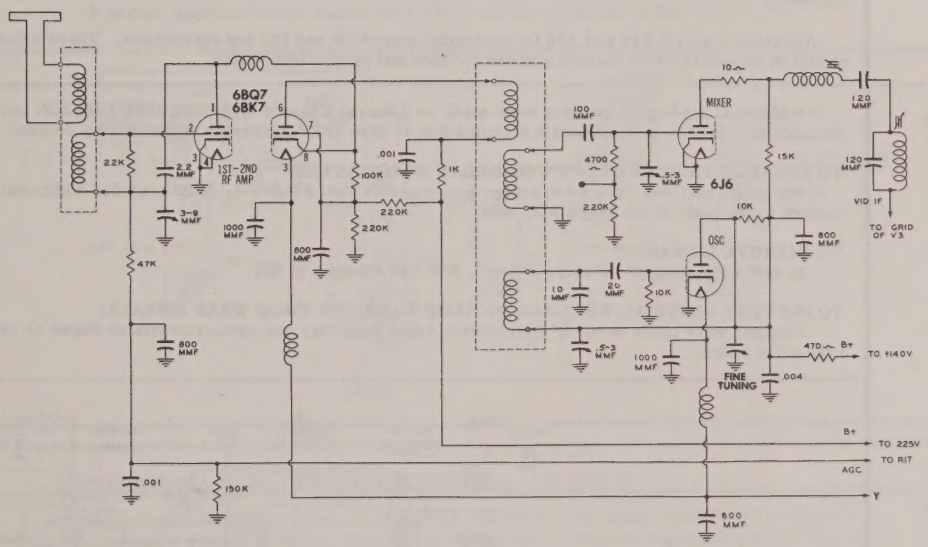
The table below lists new Models that were added to the group covered in Photofact Folder 2 In Set 135.

MODELS	TV CHASSIS	PICTURE TUBE	TV TUNER	TYPE
17K21, 17K22	21F1	17BP4	94C18-4 or 94C37-1	TV Only
27K85, 27K86, 27K87	21F1 or 21P1	17BP4 17CP4	94C18-4 or 94C37-1 94C18-4 or 94C37-1	TV-Radio-Phono
37K55, 37K56, 37K67	21G1 or 21Q1	17BP4 17CP4	94C37-1 94C37-1	TV-Radio-Phono
121K15, 121K16, 121K17	21M1	20CP4 20DP4	94C37-1	TV Only
221K45, 221K46, 221K47	21M1	20CP4 or 20DP4	94C37-1	TV Only
321K65, 321K66, 321K67	21N1	20CP4 or 20DP4	94C37-1	TV-Radio-Phono

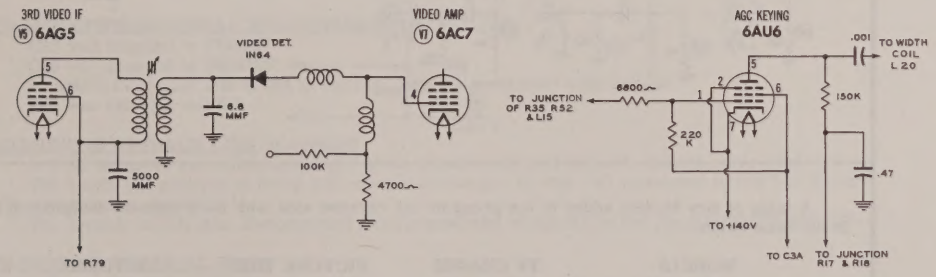
Chassis 21M1 and 21N1 are electrically identical to chassis 21K1 and 21L1.

The following production changes apply to the chassis for the new Models.

The tuner was changed to a new type part number 94C37-1. A schematic of this tuner is shown below.



The video detector and AGC tube V6, was removed from the circuit. A 1N64 crystal diode was then employed as a video detector while a type 6AU6 tube was added to provide keyed AGC. Partial schematics of these circuits are shown below.



ADMIRAL CHASSIS
21F1, 21G1, 21M1, 21N1, 21P1, 21Q1

CONTINUED ON REVERSE SIDE

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1952 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

R35 was disconnected from +255VDC line and connected to C1B.

R33 and R34 removed.

The junction of R25, C1B and Pin 6 of V7 was connected to +140VDC.

R91 was shunted with a 7500Ω@ 5W resistor.

A 470Ω resistor was connected from the cathode of V7 to ground.

R37 changed 560K

When keyed AGC was applied C22, R31 and R32 were removed.

ALIGNMENT OF 94C37-1 TUNER

Alignment of the 94C37-1 Tuner should be made from alignment instructions in Folder 2 in Set 135 with the following exceptions:

While making RF and Mixer Alignment connect the negative lead of a 3 volt battery to Point E and the positive lead to chassis.

Adjust A24 to bring up the video carrier side of the RF response curve.

Adjustment of A25 shifts the center of the response curve in relation to the video and sound carrier markers.

Alternately adjust A25 and A26 for maximum amplitude and flat top appearance. These adjustments should be consistent with correct marker location and proper band width.

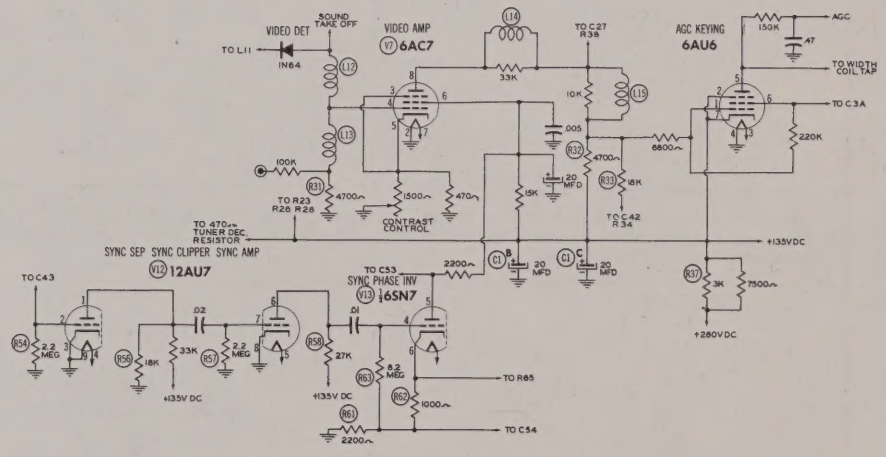
Run 15
Thru
Run 17

Additional production changes were made on Admiral Chassis 21F1, 21G1, 21M1, 21N1, 21P1 and 21Q1 stamped Run 15 to Run 17. Chassis stamped Run 17 have color converter socket wiring omitted.

TO PREVENT PICTURE CUT-OFF OR DELAY IN AGC ACTION
The width coil was changed to a three terminal coil Part #94A39-1. This provides additional pulse voltage to the plate of the keyed AGC tube.

TO IMPROVE LINEARITY
In sets employing 20 "Picture Tubes", R70 was changed to 10K.

TO PREVENT VERTICAL ROLL AND PICTURE WASH-OUT FROM WEAK SIGNALS:
Changes were made in the IF Amplifiers, video amplifier and sync. circuits as shown on the partial schematic below.



A table of new Models added to the group on the reverse side with their chassis designation is given in the table below.

MODELS	TV CHASSIS	PICTURE TUBE	TV TUNER	TYPE
17M15, 17M16, 17M17	21F1 or 21P1	17BP4, 17CP4	94C37-1	TV Only
37F55, 37F56, 37F57	21G1 or 21Q1	17BP4, 17CP4	94C37-1	TV Radio-Phono
321F65, 321F66, 321F67	21N1	20CP4 or 20DP4	94C37-1	TV Radio-Phono

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 11 IN SET 86

TRAVLER
MODEL 16T

The following production changes were made on Trav-Ler Models 10T and 12T to make Model 16T.

A22KΩ resistor added in series with lead to picture tube control grid pin 2.

R54 changed to 220K.

R78 changed to 27K.

R83 changed to 2.2K.

A10 MMF capacitor was connected from pin 4 of V18 to the junction of C80 and R96.

V16A, vertical oscillator, changed to type 6C4 tube.

V16B, vertical amplifier, changed to type 6K6GT tube.

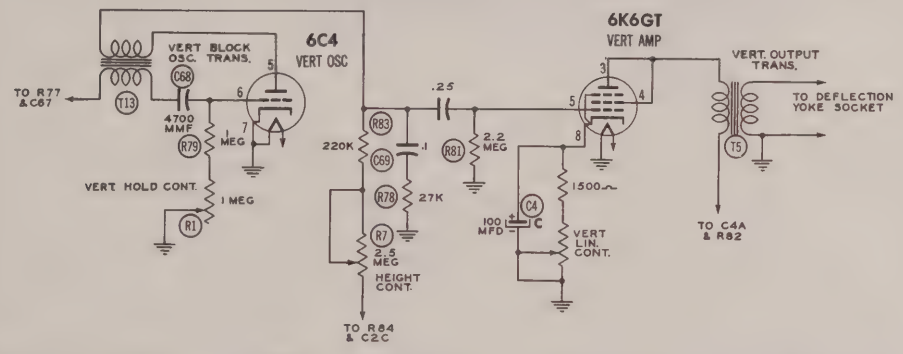
The horizontal output transformer was changed to part number TV-TR-26.

The vertical output transformer was changed to part number TV-TR-5.

The focus coil was changed to part number TV-TR-26.

The picture tube was changed to a type 16AP4 metal or 16LP4 glass.

A partial schmatic below shows the vertical circuit employed in Model 16T.



SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 16 IN SET 137

WESTINGHOUSE MODELS
H-642K20A (Ch. V-2194-1
H-652K20 (Ch. V-2194-2, -3)

Westinghouse Model H652K20 Chassis V-2194-2 or V-2194-3 is the same electrically as Model H-642K20A covered by Photofact Folder 16 in Set 137 except that a different Volume-contrast control-on off switch assembly is used. The Part Number for this complete assembly is V-9877-2. Chassis V-2194-2 is the same as V-2194 and Chassis V-2194-3 is the same as V-2194-1.

Production changes on Chassis V-2194, -1, -2, -3 follows:

CHANGES IN HEIGHT CONTROL CIRCUIT

In some chassis the height control was changed to a 250K Control Part Number V-9813-4. When a 250K Control was used a 470K Resistor was added in series with the junction of C6 and R70, and R69 in series with the vertical hold control was changed to270K.

TO IMPROVE HORIZONTAL MULTIVIBRATOR STABILITY

C77 was changed to 47MMF
C76 was changed to 120MMF
A .1MFD Capacitor was added in parallel with the horizontal hold control.
R84 was changed to 270K.

TO PROVIDE RETRACE LINE BLANKING

A 470K Resistor was added between 2 of the picture tube and the arm of the picture tube.
The electrical position of R71 & C67 were interchanged so that C67 connected to Pin 2 of V14 and R71 connected to ground.
The lowside of C37 was disconnected from ground and connected to the junction of R71 and C67.

TO IMPROVE VERTICAL HOLD

R65 was changed to 1800Ω

CONTINUED ON REVERSE SIDE

PRODUCTION CHANGES
BULLETIN 31

PRODUCTION CHANGES
BULLETIN 31

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1952 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

TO TRAP OUT SOUND CARRIER OF LOWER ADJACENT CHANNEL

A 47.25MC trap Part #V-10771 was added to trap out the sound IF carrier of lower adjacent channels. The trap consists of a slug tuned reactor in parallel with a 12MMF Capacitor. One end of the trap is connected to ground and the other end connected through a 1.5MMF Capacitor to Pin 1 of V4 the 2nd video IF amplifier.

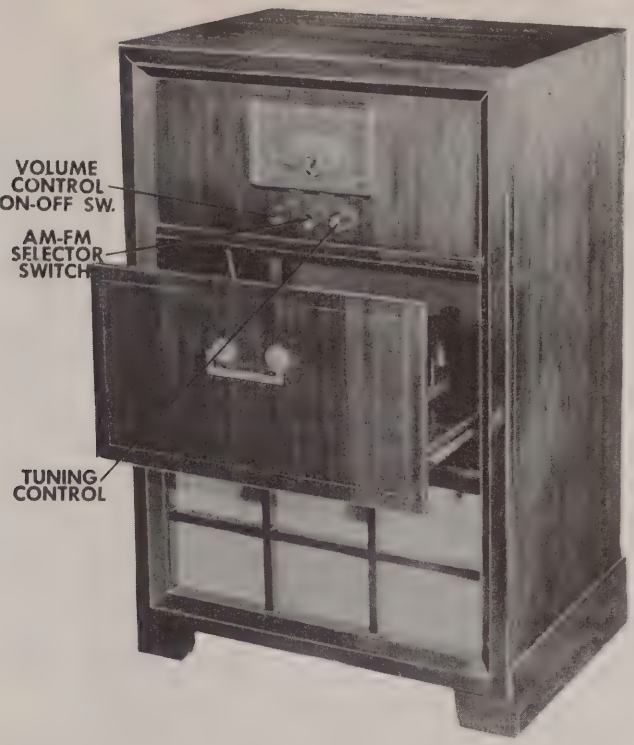
If adjacent channel interference is not a problem the sound trap will not ordinarily require adjustment. The trap, however, should not be misadjusted into the IF response section. In areas where adjacent channel interference is not troublesome the trap may be set at its highest frequency position by rotating the slug completely counter clockwise and left at this setting.

Either of two ways may be employed for adjusting the trap to eliminate adjacent channel interference. The first method requires an AM signal generator with an output of .02Volt or higher connected to the grid of the 1st. video IF Amplifier and adjust the output frequency accurately to 47.25MC. The sound trap is then adjusted for minimum indication on a scope which is connected to the video test terminal.

A second method that can be used for trap adjustment requires a good antenna connected to the receiver and the receiver carefully tuned to a station on which adjacent channel interference occurs. The trap in its full counter clockwise position is rotated clockwise until the interference is eliminated.

Adjusting the adjacent channel sound trap may affect the alignment of L12. In this case L12 may require realignment.

ARVIN
MODELS 582CFB, 582CFM (Ch. RE-310)

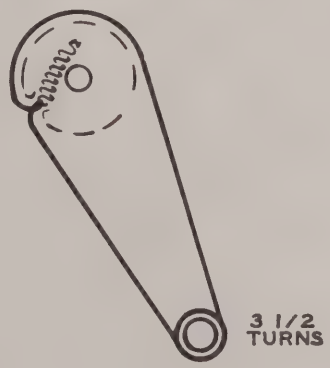


ARVIN
MODELS 582CFB, 582CFM (Ch. RE-310)

TRADE NAME	Arvin Model 582CFB, 582CFM (Ch. RE-310)
MANUFACTURER	Arvin Industries, Inc., Columbus, Ohio
TYPE SET	AC Operated AM-FM-Phono Combination Superheterodyne Receiver
TUBES (EIGHT)	Types. 6BA6 FM RF Amp., 12AT7 FM Conv., 6BE6 AM Conv., 6BA6 1st FM-AM IF Amp. 6BA6 2nd. FM IF Amp., 6T8 Ratio Det.-AM Det-AVC-AF Amp., 6V6GT Power Output, 6X4 Rectifier
POWER SUPPLY	110-120 Volts AC — RATING 139 Amp., @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1600KC FREQ. MOD. 88-108MC

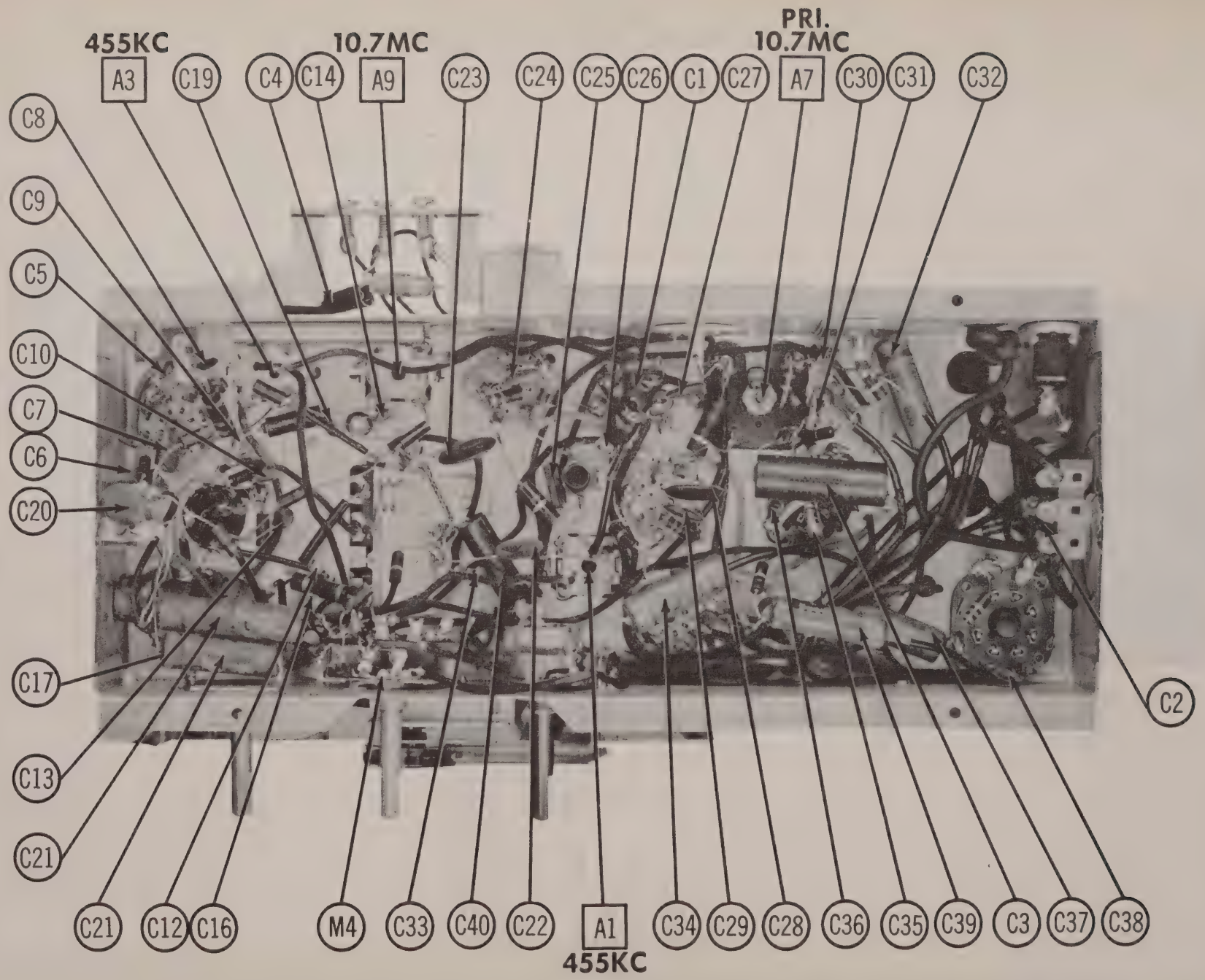
FOR SERVICE INFORMATION ON RECORD CHANGER UNIT, SEE PHOTOFACT SET #107-FOLDER #13 OR RECORD CHANGER MANUAL CM-3.

TUNING GANG FULLY CLOSED



DIAL CORD DRIVE

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1952 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America


455KC
A3
C19
C4
C14
10.7MC
A9
C23
C24
C25
C26
C1
C27
PRI.
10.7MC
A7
C30
C31
C32
C8
C9
C5
C10
C7
C6
C20
C17
C13
C21
C2
C21
C12
C16
M4
C33
C40
C22
A1
455KC
C34
C29
C28
C36
C35
C39
C3
C37
C38

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	FM RF Amplifier	6BA6	6BA6	7BK	
V2	FM Converter	12AT7	12AT7	9A	
V3	AM Converter	6BE6	6BE6	7CH	
V4	1st FM-AM IF Amplifier	6BA6	6BA6	7BK	
V5	2nd FM IF Amplifier	6BA6	6BA6	7BK	
V6	Ratio Detector-AM Detector-AVC-AF Amplifier	6T8	6T8	9E	
V7	Power Output	6V6GT	6V6GT	7AC	
V8	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

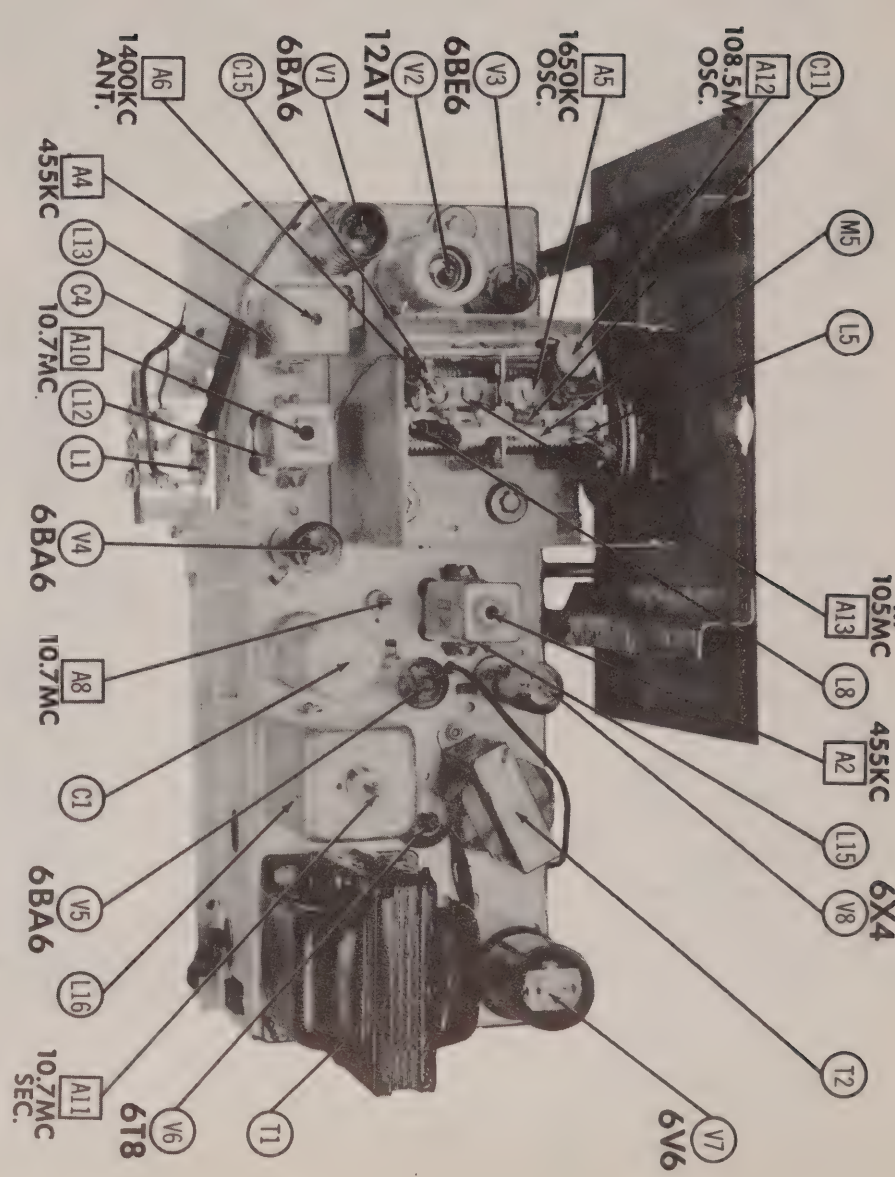
ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ARVIN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	250	A22806	AFH-3-20		UP42225		TVL-3540	■ Filter
B	20	250							▲ Filter
C	20	250							Filter
C2	10	25	A22602	PRS25/10		BR102A		TVA-1204	Power Output Cathode
C3	4	25	A22659	PRS150/4		BR415		TVA-1203	Stabilizing
C4	47		C20203-470	SI47	D6-470	5W5Q5	GP1K-470	5GA-Q47	FM RF Coupling
C5	1000		C23078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	FM RF Amp. Plate
C6	10000		A22295	BPD-01	DD-103	1D3S1	821-01	5HK-S1	FM RF Amp. Screen
C7	5000		A21674	BPD-005	DD-502	1D5D1	811-005	5HK-D5	FM RF Amp. Cathode
C8	1000		C22078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	FM RF Amp. Filter
C9	100		C20202-101	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	FM RF Coupling
C10	1000		C22078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	FM Mixer Cathode
C11	1.5		A20238-3	SI1.5NP0	TCZ-1.5		NP0K-1R5		FM Osc. Coupling
C12	50		C20205-5				N750L-500		FM Osc. Frid Cap.
C13	1000		C22078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	FM Osc. Plate
C14	1000		C22078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	FM Mixer Plate
C15	3.3		C20205-20				N220K-3R3		Fixed Trimmer
C16	100		C20203-101	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	AM RF Coupling
C17	47		C20203-470		TCZ-47		NP0L-470	5TCC-Q47	AM Osc. Grid Cap.
C18	.01	400	C20068-103	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	AM Osc. Anode
C19	1000		C22078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	AVC Filter
C20	5000		A21674	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AVC Filter
C21	.05	200	C20067-503	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C22	5000		A21674	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st IF Amp. Plate
C23	10000		A22295	BPD-01	DD-103	1D3S1	821-01	5HK-S1	1st IF Amp. Screen
C24	5000		A21674	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st IF Amp. Cathode
C25	22			1469-000025		5R5Q25		MS-425	Fixed Trimmer
C26	15		C20203-150	SI15	D6-150		GP1K-150	5GA-Q15	FM IF Coupling
C27	5000		A21674	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd FM IF Amp. Plate
C28	10000		A22295	BPD-01	DD-103	1D3S1	821-01	5HK-S1	2nd FM Amp Screen
C29	5000		A21674	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd FM IF Cathode
C30	100		C20203-101	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	Diode Load Cap.
C31	100		C20203-101	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	Diode Load Cap.
C32	.003	600	C20069-302	P688-003	D6-302	PTE6D3	GP2-333-302	6TM-D3	De-emphasis
C33	100		C20203-101	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	Diode RF Filter
C34	.01	400	C20068-103	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C35	220		C20203-221	SI220	D6-221	5W5T25	GP2K-221	5GA-T22	AF Amp. Grid
C36	100		C20203-101	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	AF Amp. Plate
C37	.02	400	C20068-203	P488-02	DF-203	PTE4S2		4TM-S2	Audio Coupling
C38	1000		C22078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	Power Output Plate †
C39	.0005	1000							Tone Comp.*
C40	.01	400	C20249-103	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Line Filter

* Not used in all models
† Some models use .02MFD in this application.

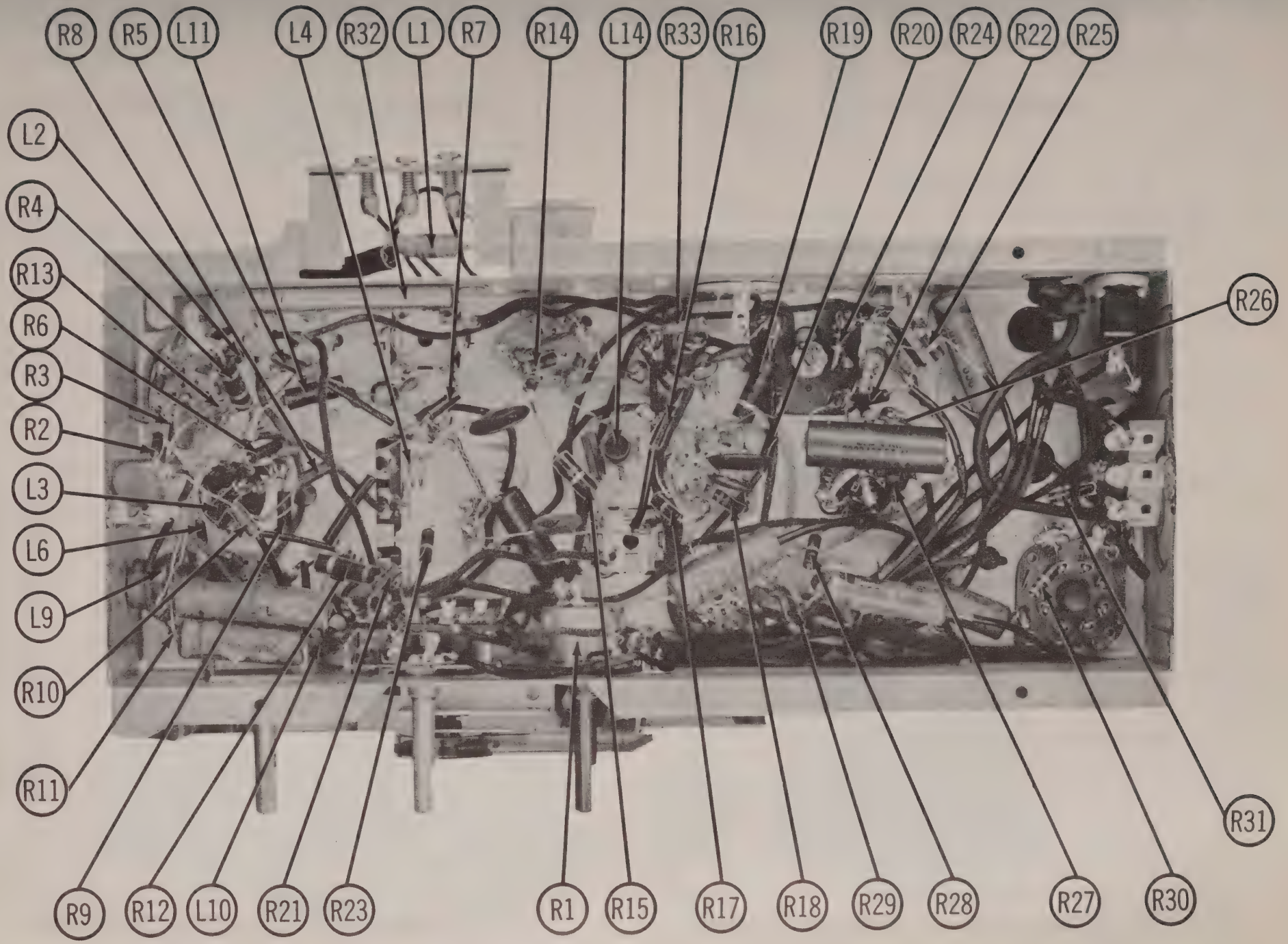
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARVIN PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500K	½	C22963	Q13-133	AG-60-Z	B-60-S	Volume Control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWE	Not Req.	Attach to R1A per instructions

CHASSIS—TOP VIEW



SET 156 FOLDER 4


R8
R5
L11
L4
R32
L1
R7
R14
L14
R33
R16
R19
R20
R24
R22
R25
L2
R4
R13
R6
R3
R2
L3
L6
L9
R10
R11
R26
R31
R9
R12
L10
R21
R23
R1
R15
R17
R18
R29
R28
R27
R30

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer parallel with base of dial.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 7 (grid) of 6BE6(V3). Low side to chassis.	455KC (400∿ mod.)	AM (CCW)	Tuning gang fully open.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output.
2.		Loop	1650KC	"	"	"	A5	Fashion loops of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	"	Tune for maximum output.	"	A6	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (-1%) resistors in series from point Ⓐ to B-. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to pin 1, (grid), of 6BA6, (V4) Low side to chassis.	10.7MC (unmod.)	FM (center)	Tuning gang fully closed.	DC probe to point Ⓐ. Common to chassis.	A7, A8	Adjust for maximum deflection.
5.	"	High side to pin 7, (grid) of 12AT7, (V2). Low side to chassis.	"	"	"		A9, A10	"
6.	"	"	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A11	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
4.	.01MFD	High side to pin 1, (grid), of 6BA6, (V4) Low side to chassis.	10.7MC (450KC Swp)	FM (center)	Point of non-interference	Vert. Amp. to point Ⓐ. Low side to chassis.	A7, A8	Disconnect stabilizer capacitor C3. Adjust for maximum amplitude and symmetry as per fig.1.
5.	"	High side to pin 7. (grid), of 12AT7 (V2). Low side to chassis.	"	"	"	"	A9, A10	"
6.	"	"	"	"	"	Vert. Amp. to point Ⓑ. Low side to chassis.	A11	Reconnect capacitor C3. Adjust A11 so10.7MC occurs at center of crossover lines as per Fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Two 150Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	108.5MC (unmod.)	FM	Tuning gang fully open.	DC probe to point Ⓑ. Common to chassis.	A12	Adjust for maximum deflection.
8.	"	"	87.5MC	"	Tuning gang fully closed.	"	L5	Expand or compress coil turns for maximum deflection. Repeat steps 7 and 8 until no further improvement can be made.
9.	"	"	105MC	"	Tune for max. deflection.	"	A13	Rock tuning gang while adjusting A13 for maximum deflection.

FIG. 1

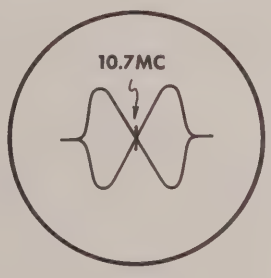
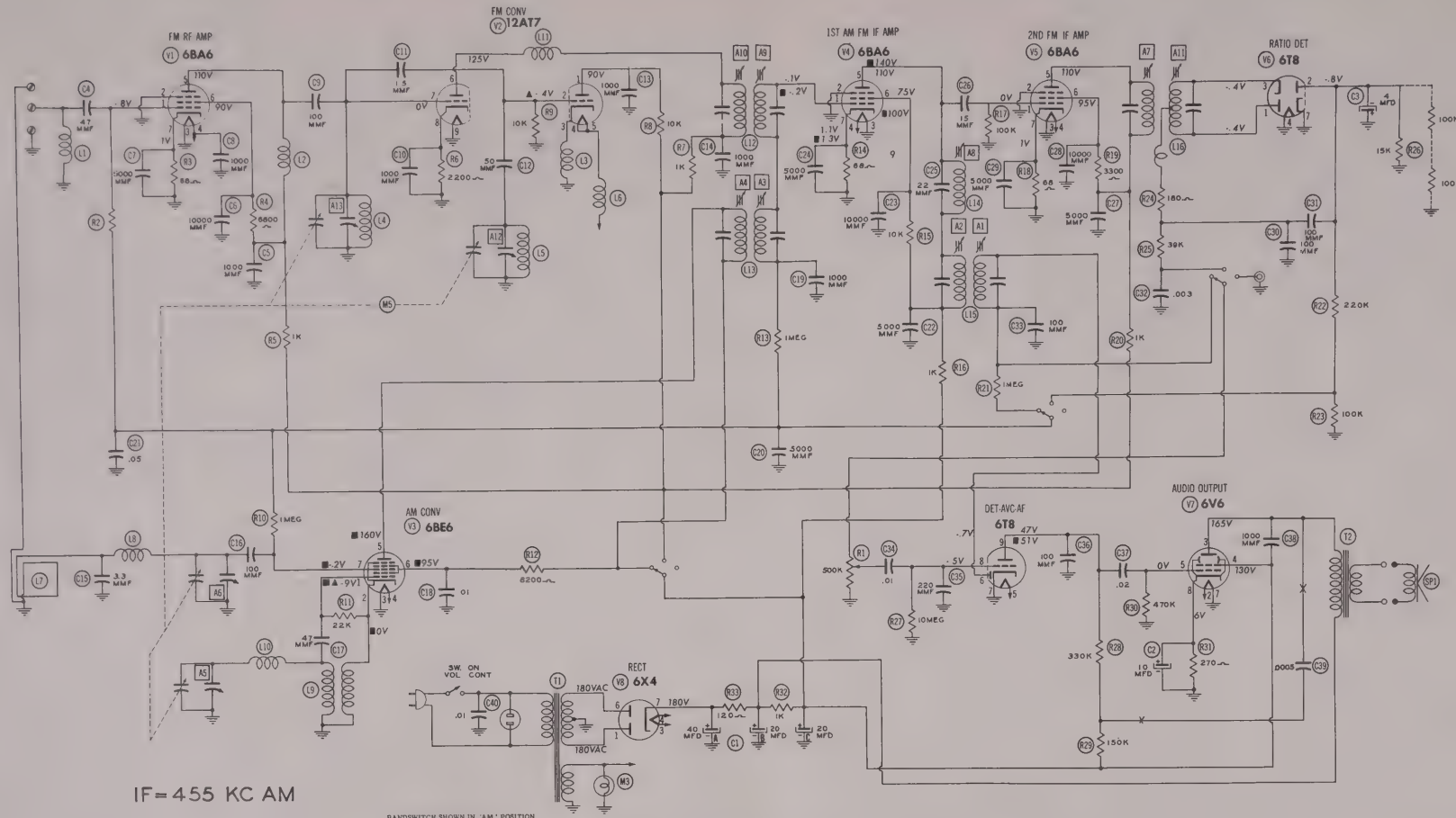


FIG. 2



BANDSWITCH SHOWN IN 'AM' POSITION.
BANDSWITCH SEQUENCE
1. AM
2. FM
3. PHONO

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BA6	1.2Meg	0Ω	0Ω	.1Ω	†2.1KΩ	†9KΩ	68Ω		
V 2	12AT7	†12KΩ	10KΩ	.5Ω	.8Ω	.8Ω	†2.1KΩ	0Ω	2.2KΩ	0Ω
V 3	6BE6	22KΩ	.6Ω	0Ω	.1Ω	■1.1KΩ	■9.3KΩ	■2.5Meg		
V 4	6BA6	1.2Meg ■2.5Meg	0Ω	0Ω	.1Ω	†2.1KΩ	†12KΩ	68Ω		
V 5	6BA6	100KΩ	0Ω	0Ω	.1Ω	†2.1KΩ	†5.4KΩ	68Ω		
V 6	6T8	540KΩ	10KΩ	540KΩ	0Ω	.1Ω	■500KΩ	0Ω	10Meg	†480KΩ
V 7	6V6GT	INF	.1Ω	†385Ω	†1.1KΩ	470KΩ	INF	0Ω	270Ω	
V 8	6X4	170Ω	†1.1KΩ	0Ω	.1Ω	†1.1KΩ	180Ω	80KΩ		

▲ TAKEN WITH VACUUM TUBE VOLTMETER
ALL MEASUREMENTS TAKEN IN FM POSITION
† MEASURED FROM PIN 7 OF V8
■ MEASURED IN AM POSITION

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1952

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	ARVIN PART No.	IRC PART No.		
R2	1Meg	½	C20060-105	BTS-1Meg	FM-RF Amplifier Grid	
R3	68Ω	½	C20060-680		FM-RF Amplifier Cathode	
R4	6800Ω	1	C20070-682	BTA-6800	FM-RF Amplifier Screen	
R5	1000Ω	½	C20060-102	BTS-1000	FM-RF Amplifier Decoupling	
R6	2200Ω	½	C20060-222	BTS-2200	FM Mixer Cathode	
R7	1000Ω	½	C20060-102	BTS-1000	FM Mixer Decoupling	
R8	10KΩ	½	C20060-103	BTS-10K	FM Oscillator Plate	
R9	10KΩ	½	C20060-103	BTS-10K	FM Oscillator Grid	
R10	1Meg	½	C20060-105	BTS-1Meg	AM Converter Grid	
R11	22KΩ	½	C20060-223	BTS-22K	AM Oscillator Grid	
R12	8200Ω	1	C20070-822	BTA-8200	AM Oscillator Anode	
R13	1Meg	½	C20060-105	BTS-1Meg	AVC Network	
R14	68Ω	½	C20060-680		1st IF Amplifier Cathode	
R15	10KΩ	1	C20070-103	BTA-10K	1st IF Amplifier Screen	
R16	1000Ω	½	C20060-102	BTS-1000	1st IF Amplifier Decoupling	
R17	100KΩ	½	C20060-104	BTS-100K	2nd IF Amplifier Grid	
R18	68Ω	½	C20060-680		2nd IF Amplifier Cathode	
R19	3300Ω	1	C20070-332	BTA-3300	2nd IF Amplifier Screen	
R20	1000Ω	½	C20060-102	BTS-1000	2nd IF Amplifier Decoupling	
R21	1Meg	½	C20060-105	BTS-1Meg	AVC Network	
R22	220KΩ	½	C20060-224	BTS-220K	AVC Network	
R23	100KΩ	½	C20060-104	BTS-100K	AVC Network	
R24	180Ω	½	C20060-181	BTS-180	Balancing	
R25	39KΩ	½	C20060-393	BTS-39K	De-Emphasis	
R26	15KΩ	½	C20060-153	BTS-15K	Ratio Detector Diode Load	
R27	10Meg	½	C20060-106	BTS-10Meg	AF Amplifier Grid	
R28	330KΩ	½	C20060-334	BTS-330K	AF Amplifier Plate Load	
R29	150KΩ	½	C20060-154	BTS-150K	Feedback	See Note
R30	470KΩ	½	C20060-474	BTS-470K	Output Grid	
R31	270Ω	1	C20070-271	BTA-270	Output Cathode	
R32	1000Ω	10	A24774	1 3/4A-1000	Filter Wire-Wound	
R33	120Ω	1	A23933	BTA-120	Filter Wire-Wound	

NOTE: Not Used In All Models

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	ARVIN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @.39A	350VCT @.05A	6.3VAC @3.4A		D22959			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ARVIN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	5KΩ	4.4Ω	265Ω	.5Ω	AC23669-1	A-3877	A-2930	R0-8	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	ARVIN PART No.	JENSEN PART No.	QUAM PART No.	
SP1	P.M.	4.4Ω	AD23693-1	ST-117 Mod. P8-T	8A21	
	CONE DIA.	V. C. DIA.				
SP2	7 1/4"	3/4"				

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	ARVIN PART No.	MERIT PART No.	
L1	FM Ant. Coil	.1Ω		AA22648-1		
L2	RF Choke	.6Ω		AA21445-1		
L3	Cath. Choke	.5Ω		AA22597-1		
L4	FM RF Coil	0Ω		A22593		
L5	FM Osc. Coil	0Ω		A22594		
L6	Fil. Choke	.7Ω		A21673		Iron Core 14 Microhenries
L7	AM Loop Ant.	.2Ω	2Ω	D24770		
L8	AM Ant. Coil	.8Ω				
L9	AM Osc. Coil	.7Ω	7.8Ω	AC22587-1	BC-397	185 Microhenries @ 20MMF
L10	Parasitic Supp.	.1Ω		AA22334-1		
L11	Parasitic Supp.	0Ω				
L12	1st FM IF	1.5Ω	1.5Ω	C22590	FM-254	
L13	1st AM IF	9.5Ω	9.5Ω	C24771	BC-352	
L14	2nd FM IF	.6Ω		AC22967-1		
L15	2nd AM IF	11.8Ω	11.8Ω	C22352	BC-353	
L16	Ratio Det. Trans.	.8Ω	.1Ω	AD22592-1	FM-252	Tap at .2Ω

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	ARVIN PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		LT-5-AG	D-AG	W66B	A66U	33	0-2 or S-2	

ASTATIC, SHURE, AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	ARVIN PART No.	WALCO PART No.	JENSEN PART NO.	
M2		W-6AGA	A-832	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					ARVIN PART No.		
M3	Bayonet	6-8	.15	Brown	A19351		Type Number 47.

MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
M4	Switch	C23485	Function Selector
M5	2 Gang Var. Cap.	D24773	(30-352MMF, 18-152 MMF)
A12	Trimmer	A22724	FM Osc. Adj. (5-25MMF)
	Cabinet	R24692-1	Mahogany
	Cabinet	R24692-2	Blonde
	Dial Scale	C24709	
	Dial Pointer	A24449	
	Knobs	A24464-3	Tuning, On-Off, Bandswitch (Mahogany)
	Knobs	A24464-4	Tuning, On-Off, Bandswitch (Blonde)

PHOTOFACT* Folder

*TRADE MARK

RTMA MEMBER RADIO-TELEVISION MANUFACTURERS ASSOCIATION

DUMONT
MODEL RA-119A

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

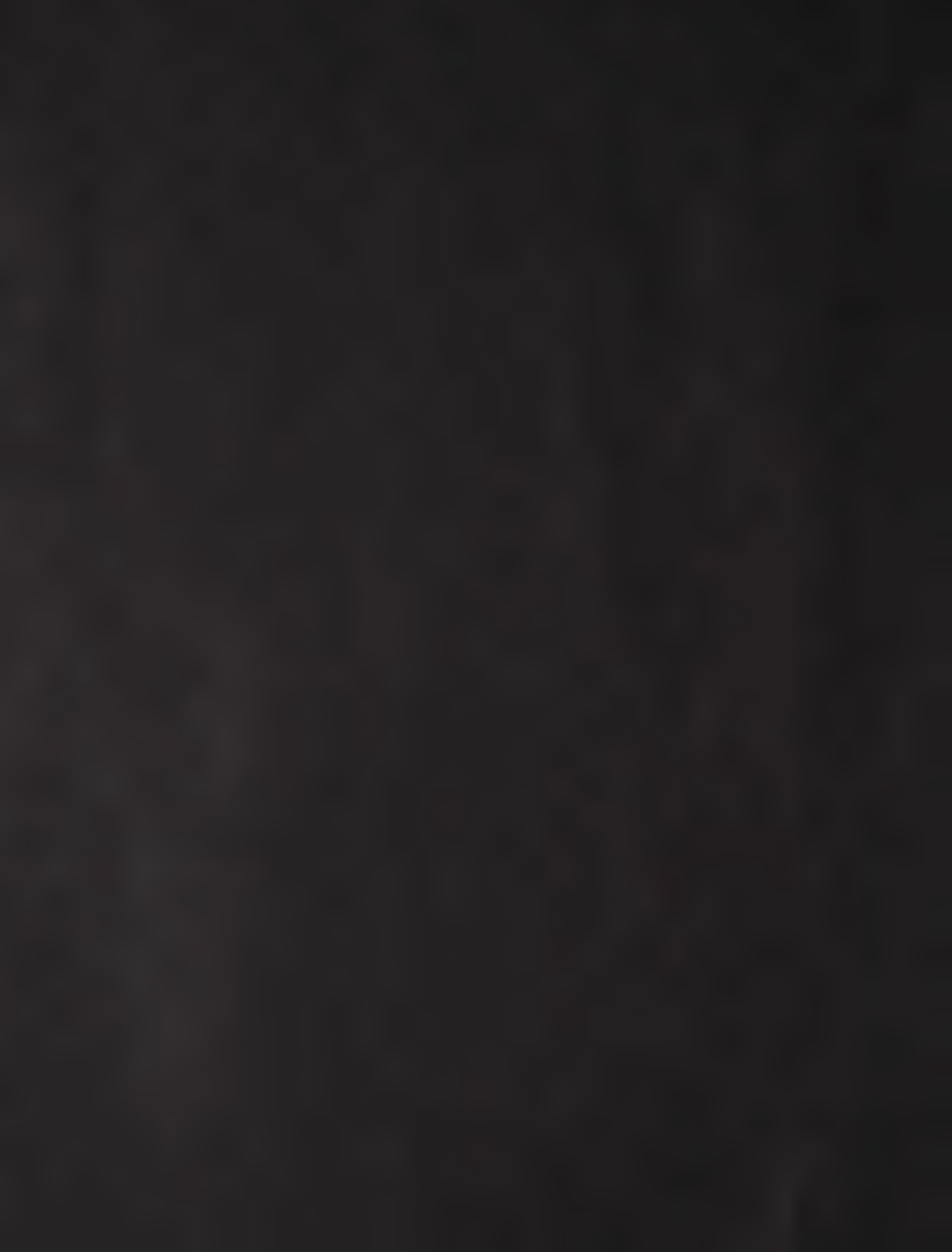
DUMONT
MODEL RA-119A

MODEL ROYAL SOVEREIGN

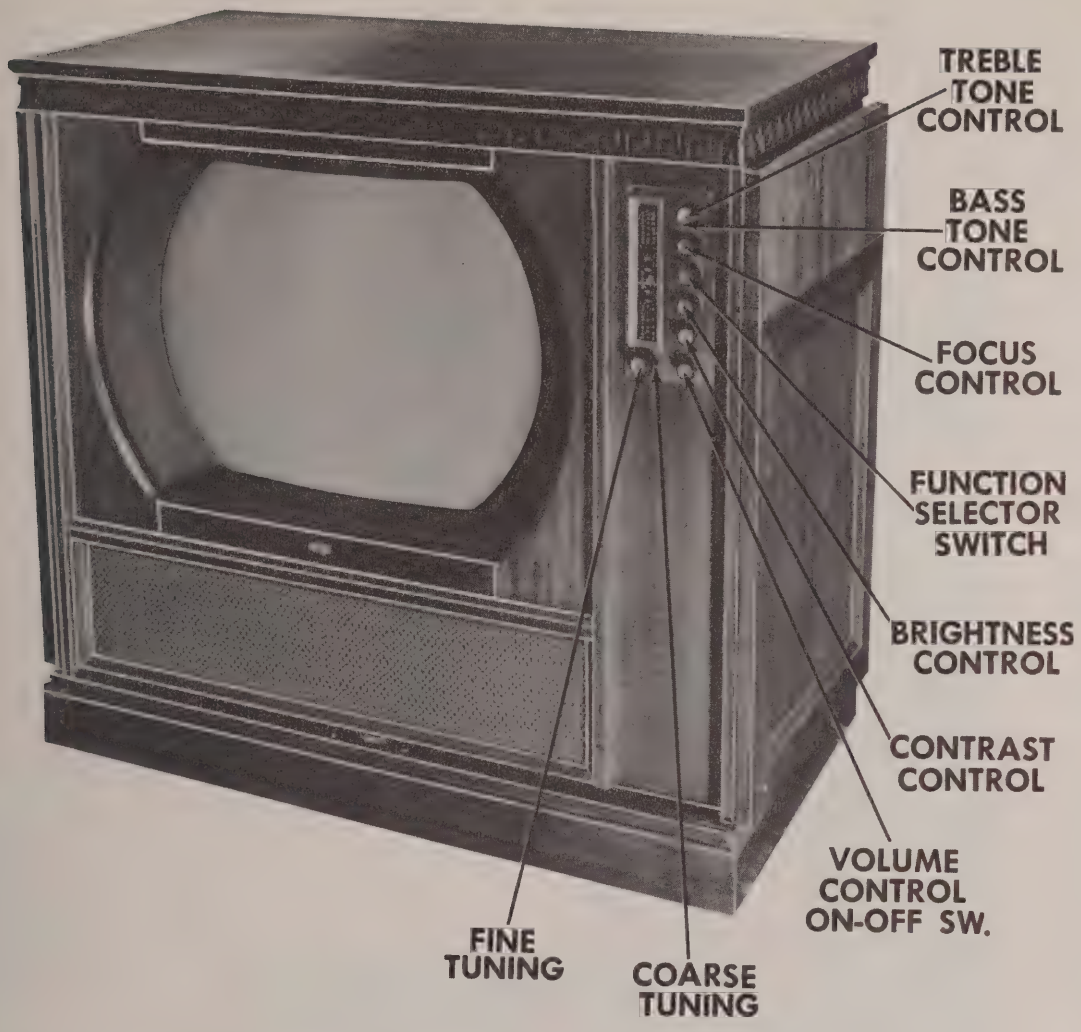
HOWARD W. SAMS & CO., INC. • Indianapolis, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1952 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 1-52 SET 156 FOLDER 5



DUMONT MODEL RA-119A



DUMONT MODEL RA-119A

Dumont Model "Royal Sovereign"

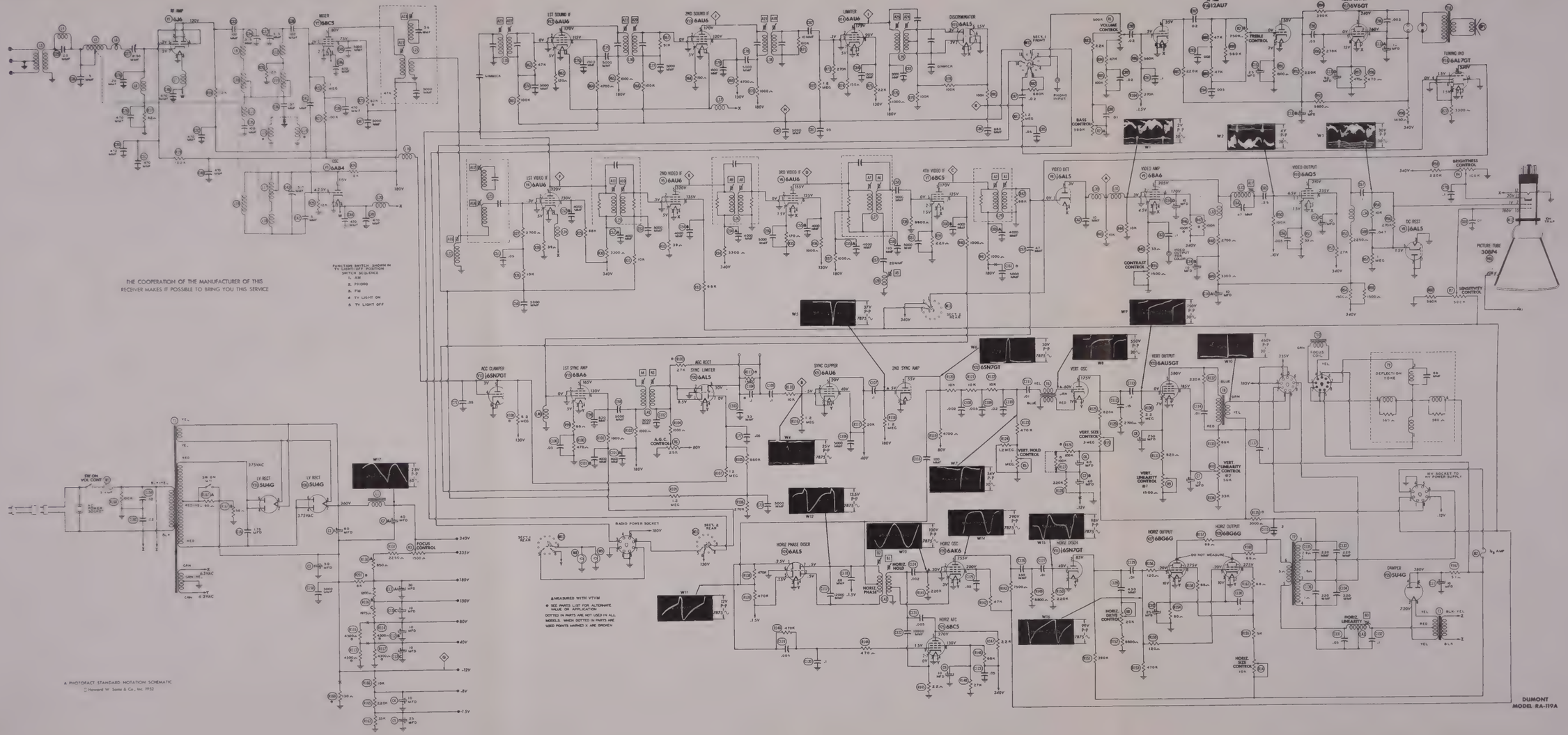
TRADE NAME	Dumont Model RA-119A
MANUFACTURER	Allen B. Dumont Labs., Inc., 2 Main St., Passiac, N. J.
TYPE SET	Television Receiver
TUBES	Forty-Five
POWER SUPPLY	110-120 Volts AC-60 Cycle Rating 5.4 Amp. @ 117 Volts AC
TUNING RANGE	44-217MC (Continuous Tuning)

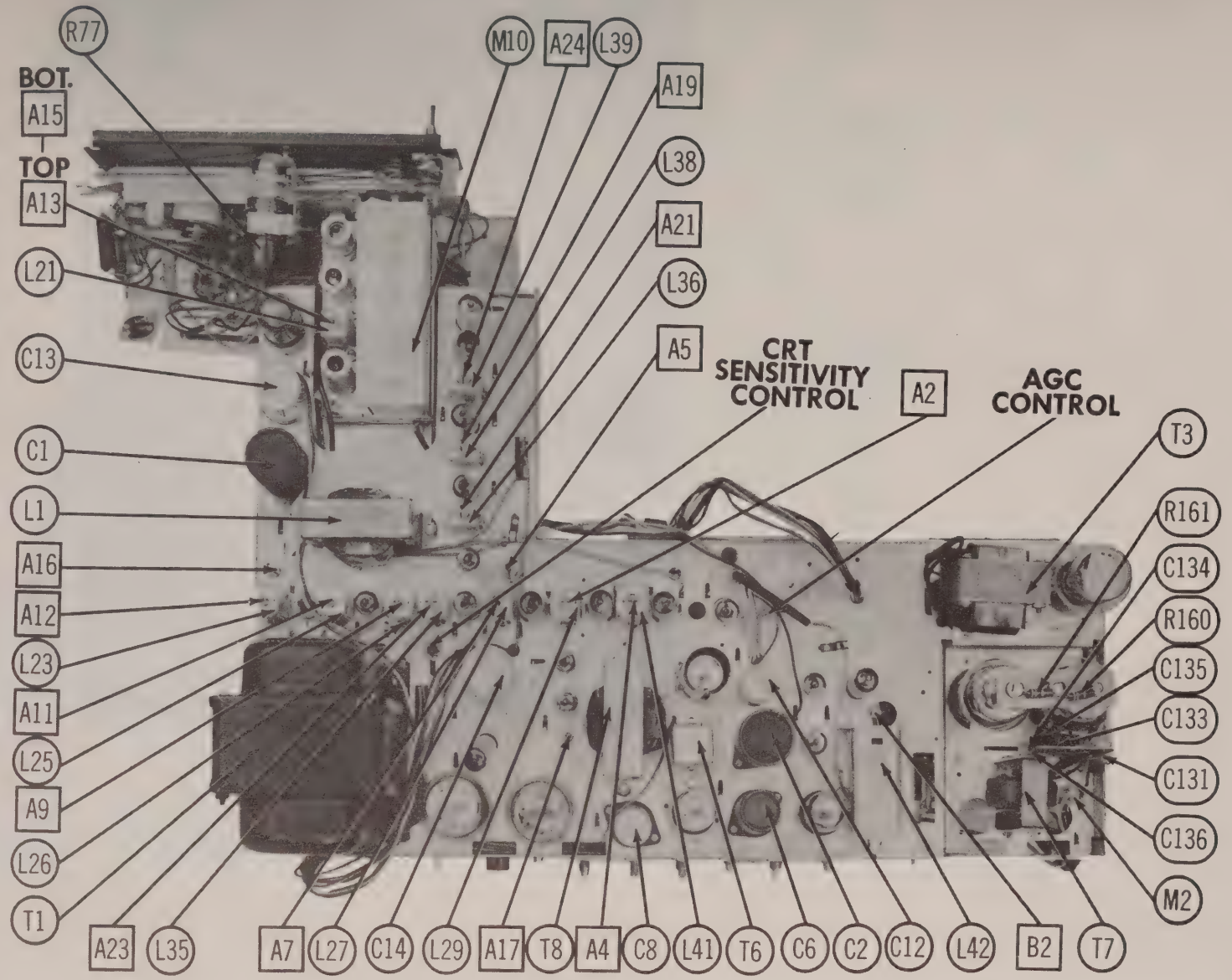
INDEX

Alignment Instructions 6, 7
Drive Cord Stringing 24
Disassembly Instructions 24
High Voltage Supply Adjustments 7
Horizontal Sweep Circuit Adjustments 22
Parts List and Descriptions ..... 12 thru 17
Photographs
Cabinet - Rear View 22
Capacitor and Alignment Identification 4, 9
Chassis - Top View 3
Photographs (cont.)
Control Panel Side View 23
Power Supply Chassis 19
RF Tuner 23
Resistor and Inductor Identification 11, 18
Resistance Measurements 8
Schematic (Main) 2
Schematic (Power Supply) 20, 21
Tube Placement Charts (Main Chassis) 5
Tube Placement Charts (Power Supply Chassis) .. 10

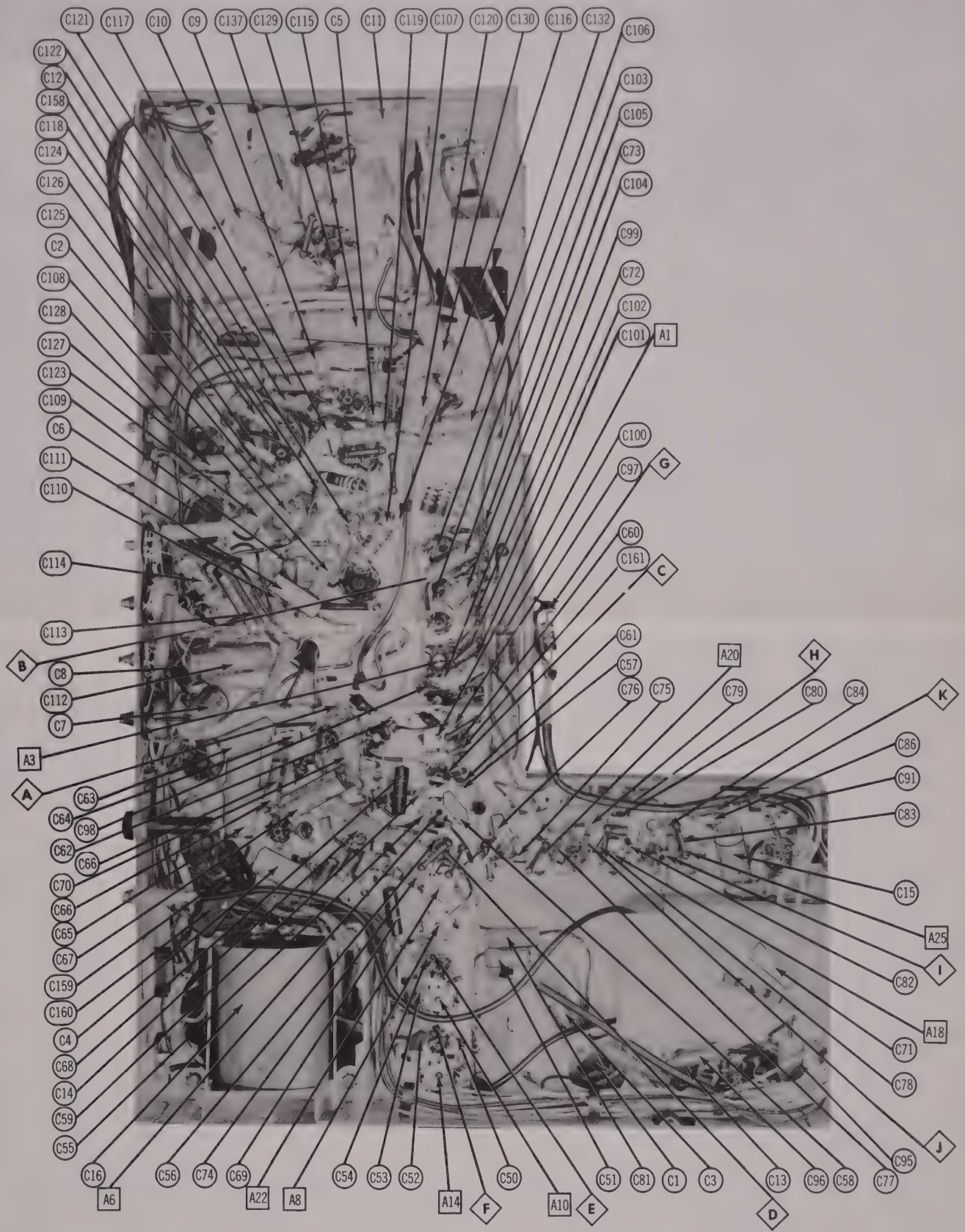
HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1952 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

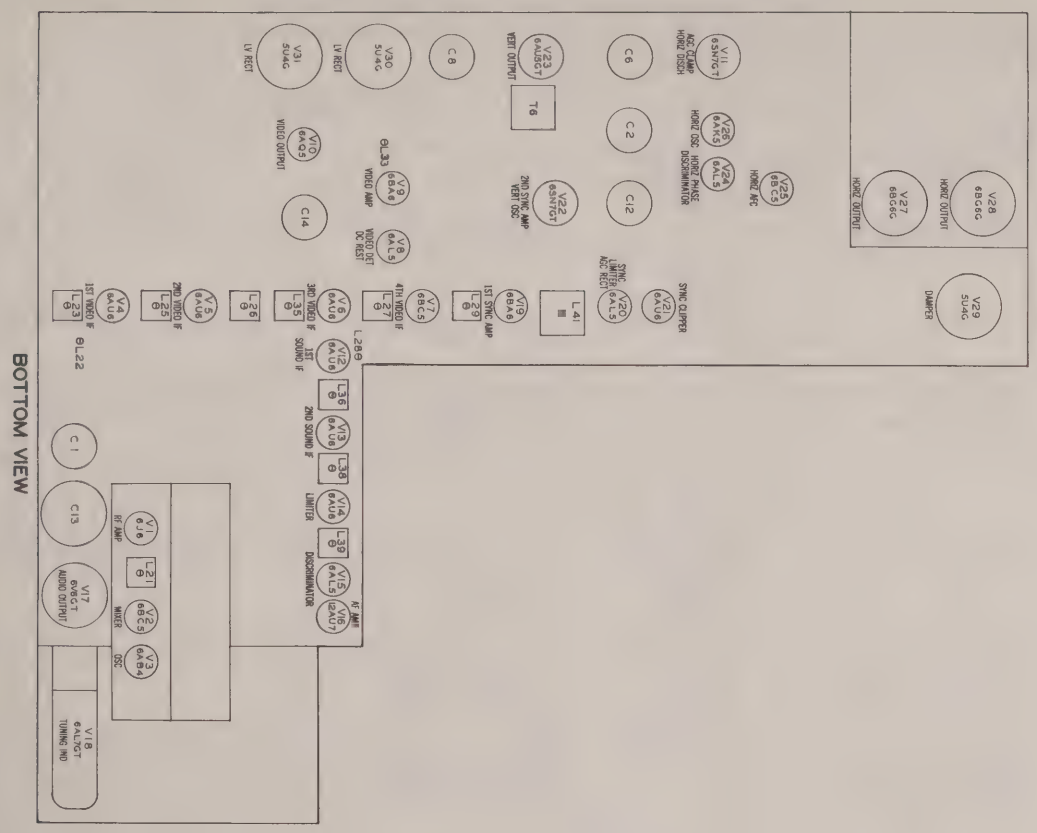

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1952
DUMONT MODEL RA-119A

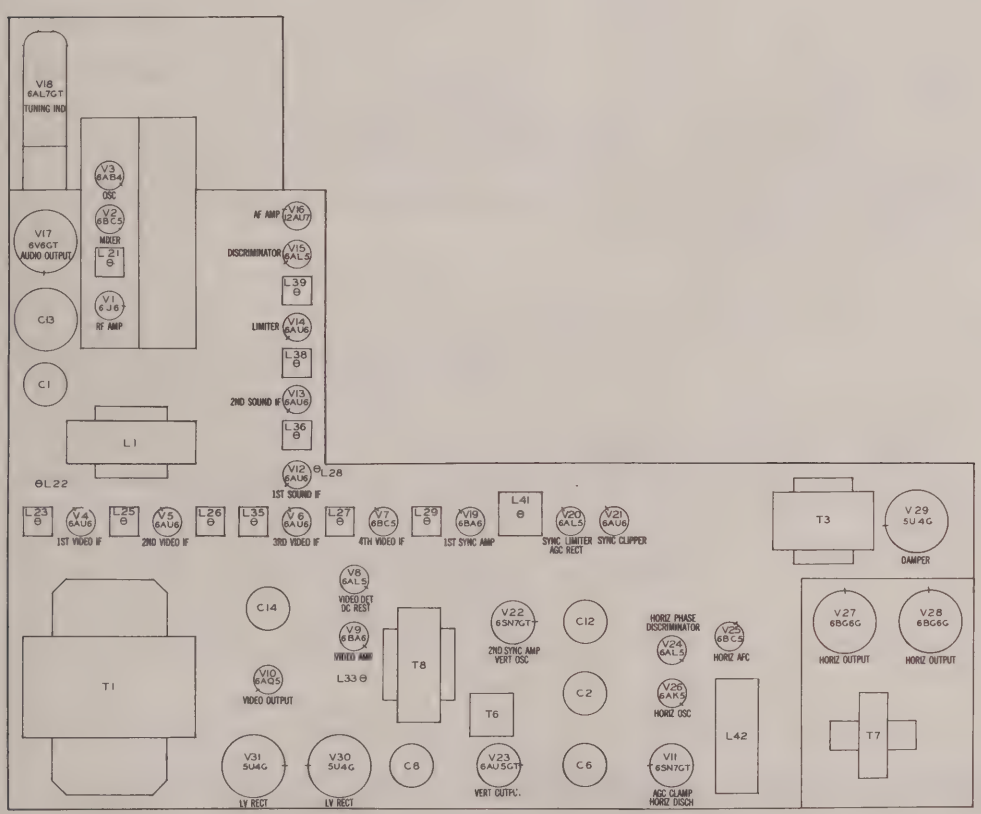


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART-MAIN CHASSIS

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the power cord, and cable connecting the high voltage supply to the main chassis. Do not operate the set without the focus and deflection plug connected.

VIDEO IF ALIGNMENT

Remove the oscillator tube (V3), the mixer tube (V2), AF output (V17) and the sync. clipper (V21), from their respective sockets.
Since the IF transformers are over coupled, the use of two alignment tools used simultaneously to align the primary and secondary is recommended to facilitate alignment.
The use of 60∿ internal saw tooth sweep on the scope is recommended, however synchronized sine wave sweep may be used if preferred.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	270MMF	High side to pin 1 (grid) of 6AU6, (V2). Low side to chassis	24MC (10MC Swp)	21.9MC 22.4MC 22.9MC 25.65MC 26.4MC	7	Vert. Amp. to point (A). Low side to chassis.	A1, A2	Adjust for response curve similar to fig. 1.
2.	"	"	26MC (2MC Swp)	25.65MC 26.4MC	"	Vert, Amp. to Point (B). Low side to chassis.	A3. A4	Adjust for response curve similar to fig. 2.
3.	"	High side to pin 1 (grid) of 6AU6 (V 6). Low side to chassis.	24MC (10MC)	21.9MC	"	Vert. Amp. thru detector probe (fig 3) to point (C). Low side to chassis.	A5	Adjust for MINIMUM marker amplitude at the 21.9MC point on response curve.
4.	"	"	"	22.4MC 22.9MC 25.65MC 26.4MC	"	"	A6, A7	Adjust for response curve similar to fig. 4.
5.	"	High side to pin 1 (grid) of 6AU6 (V5).	"	21.9MC 22.4MC 22.9MC 25.65MC 26.4MC	"	High side thru detector probe to point (D). Low side to chassis.	A8, A9	Adjust for response curve similar to fig. 5.
6.	"	High side to pin 1, (grid) of 6AU6, (V4). Low side to chassis.	"	21.9MC 22.4MC 22.9MC 25.65MC 26.4MC	"	High side thru detector probe to point (E). Low sid e to chassis.	A10, A11	Adjust for response curve similar to fig. 6.
7.	"	Replace mixer tube (V2). High side to an ungrounded tube shield floating over mixer tube. (V2). Low side to chassis	"	27.9MC	"	High side thru detector probe to point (F). Low side to chassis.	A12, A13	Adjust for MINIMUM marker indication at the 27.9MC point on response curve.
8.	"	"	"	21.9MC 22.4MC 22.9MC 25.65MC 26.4MC	"	"	A14, A15 A16	Adjust for response curve similar to fig. 7.
9.	270MMF	High side to pin 1 (grid) of 6BA6, (V9). Low side to chassis.	Not used.	4.5MC (400∿ mod.)	7	Vert. Amp. thru detector probe to pin 2 of picture tube. Low side to chassis.	A17	Adjust for MINIMUM 400∿ indication on scope.

Remove the AGC rectifier tube, (V20), from its socket and connect atVTVM between pin 2 of V20 socket and chassis. Adjust the AGC control until VTVM reads -16Volts.
After alignment is completed connect a signal , known to be of good quality and free from ghosts to the receiver. Examine the picture for evidence of smearing or ringing. If necessary make the following adjustments . Make only adjustments required. If more than a slight adjustment is required repeat the entire alignment procedure.

SMEAR: Readjust A25 no more than 1 turn.
Readjust A6 no more than ½ turn.

RING: Readjust A12 no more than ½ turn.
Readjust A9 no more than ½ turn.

SOUND IF ALIGNMENT

Connect a 100KΩ potenteometer for bias as shown in figure 8. Adjust the potentiometer to read -5 volts on a VTVM connected between point (H). and chassis.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
Turn the selector switch to "FM"

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	270MMF	High side to pin 1, (grid) of 6AU6 (V13). Low side to chassis.	22MC (1MC Swp)	21.8MC 21.9MC 22MC	7	Vert. Amp. thru detector probe to point (I) Low side to chassis.	A18, A19	Adjust for response curve similar to fig. 9.
11.	"	High side to pin 1, (grid) of 6AU6, (V12). Low side to chassis.	"	21.8MC 21.9MC 22MC	"	Vert. Amp. thru detector probe to point (J). Low side to chassis.	A20, A21	Adjust for response curve similar to fig. 9.
12.	"	High side to pin 1 (grid) of 6AU6, (V4). Low side to chassis.	"	21.8MC 21.9MC 22MC	"	Vert. Amp. thru detector probe to point (I) Low side to chassis.	A22, A23	Adjust for response curve similar to fig. 10.
13	"	"	"	21.8MC 21.9MC 22MC	"	Vert. Amp. to point (K) Low side to chassis.	A24, A25	Adjust for response curve similar to fig. 11.

THE RF TUNER PORTION OF THIS RECEIVER HAS BEEN PROPERLY ALIGNED AT THE FACTORY AND IS VERY STABLE. ALIGNMENT OF THIS PORTION SHOULD NOT BE REQUIRED IN THE FIELD.

ALIGNMENT INSTRUCTIONS (CONT.)

FIG.1

FIG.2

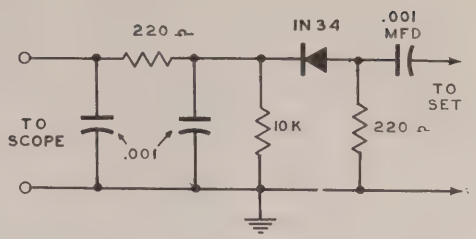


FIG.3

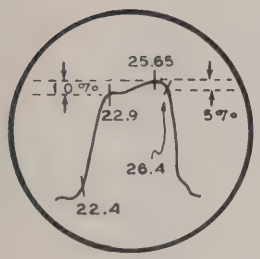


FIG.4

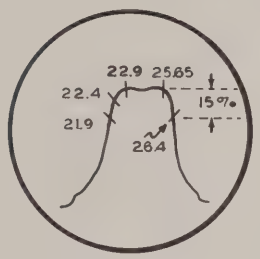


FIG.5

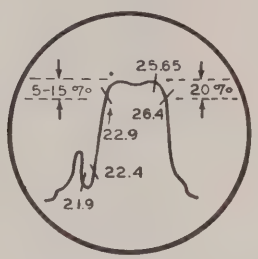


FIG.6

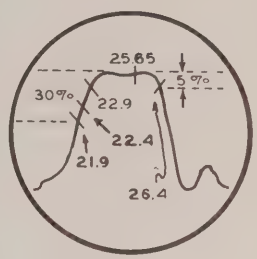


FIG.7

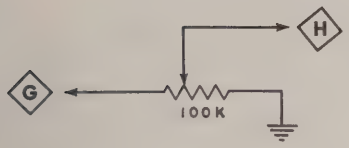


FIG.8

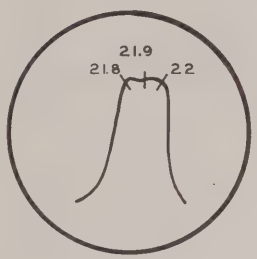


FIG.9

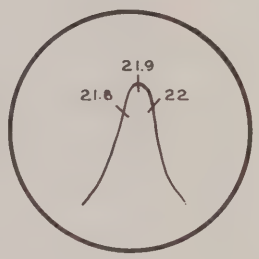


FIG.10

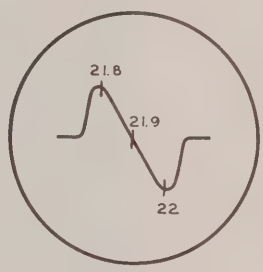


FIG.11

HIGH VOLTAGE SUPPLY ADJUSTMENT

Unsolder the lead connecting Pin 8 of V34 to R86 and insert a 0-100 milliameter in series with the lead. The meter is used to read cathode current in the H.V. control tube, (V35).

Connect a 0-30KV Voltmeter between the picture tube metal cone and chassis.

Connect the vertical input of an oscilloscope between the junction of C138 and C139, and chassis.

Turn the brightness and contrast controls to fully counter-clockwise.

Turn the frequency control on power chassis to fully counter-clockwise.

Turn the drive control on power chassis to fully clockwise.

Turn the control amplifier bias control, (H.V. control) to the mid point of its range.

Turn the set on and adjust the oscilloscope controls until a single waveform is obtained on the scope, use as little syncroniztion as possible.

Do not disturb the oscilloscope controls after they are set.

Move the oscilloscope to across R84.

Adjust the frequency control until two pulses are obtained on the scope. As this adjustment is made the current reading on the milliameter should dip. The point of two stable pulses on the scope should coincide with minimum current reading.

Adjust the drive control for minimum reading on the millameter.

Readjust the frequency control for minimum reading on the millameter. When making this adjustment the two pulses on the oscilloscope should remain stable.

Repeat adjustment of the drive control.

Adjust the H.V. Control until the high voltage output reads 22KV. Note: under no circumstances should the high voltage be allowed to exceed 25KV.

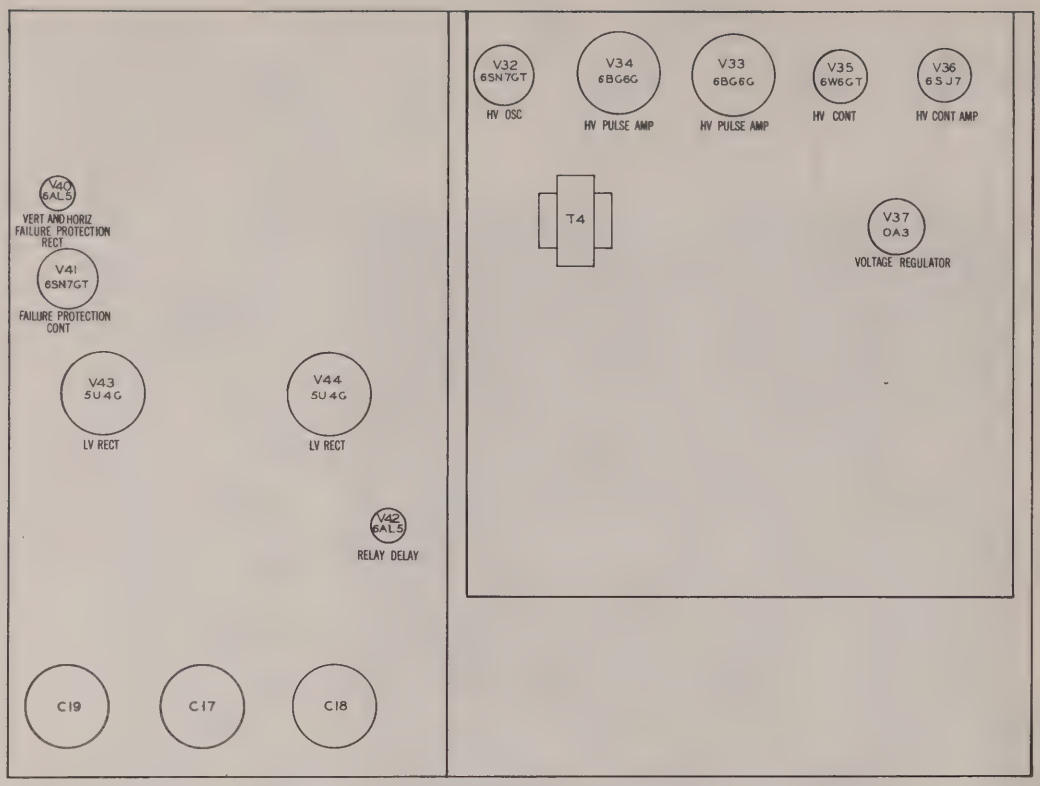
Check the operation of the high voltage supply by varying the brightness control over its entire range. If the picture size remains substanually constant the high voltage supply is operating properly.

RESISTANCE MEASUREMENTS

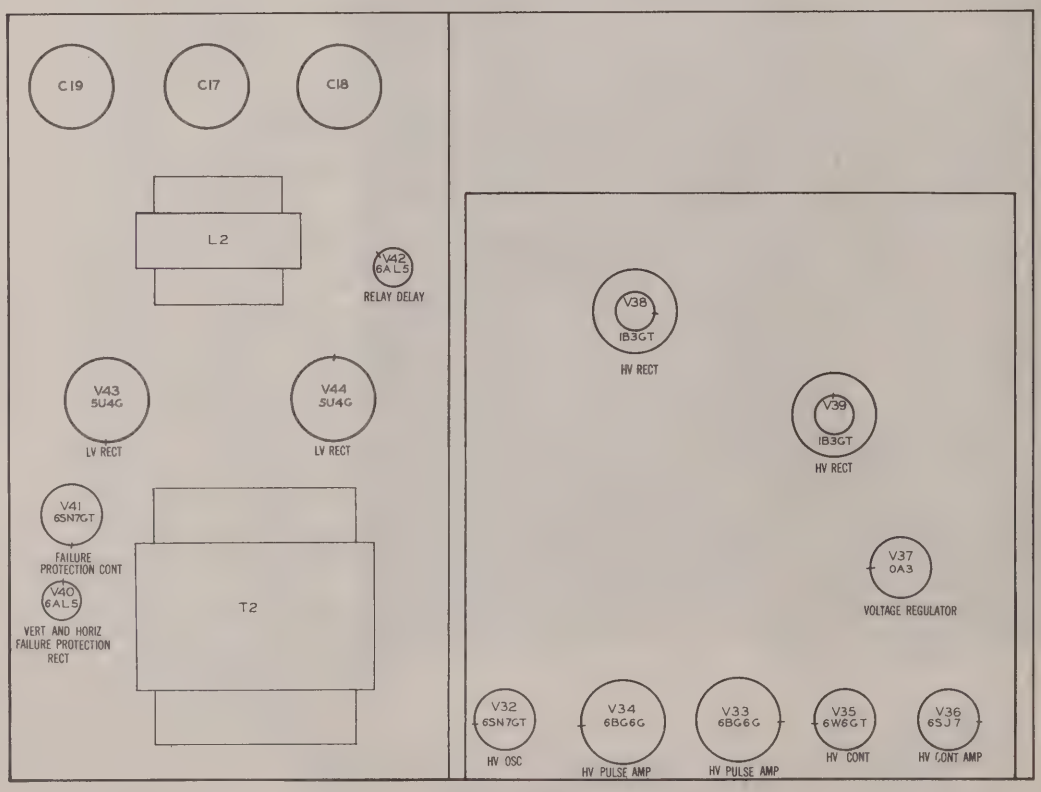
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	†11KΩ	†11KΩ	0Ω	.1Ω	2.2Meg	2.2Meg	82Ω		
V 2	6BC5	3.2Meg	0Ω	0Ω	.1Ω	†50KΩ	†60KΩ	0Ω		
V 3	6AB4	†10KΩ	Inf.	0Ω	.1Ω	Inf.	12KΩ	0Ω		
V 4	6AU6	1.5Meg	0Ω	0Ω	.1Ω	†3.3KΩ	†71KΩ	39Ω		
V 5	6AU6	1.5Meg	0Ω	0Ω	.1Ω	†3.3KΩ	†71KΩ	39Ω		
V 6	6AU6	.6Ω	0Ω	0Ω	.1Ω	†3.5KΩ	†3KΩ	120Ω		
V 7	6BC5	6.8KΩ	220Ω	0Ω	.1Ω	†2KΩ	†3KΩ	220Ω		
V 8	6AL5	.6Ω	0Ω	0Ω	.1Ω	1Meg	0Ω	5KΩ		
V 9	6BA6	5KΩ	0Ω	0Ω	.1Ω	†6.8KΩ	†50KΩ	90Ω		
V 10	6AQ5	110KΩ	33Ω	.1Ω	0Ω	†3KΩ	†27KΩ	110KΩ		
V 11	6SN7GT	220KΩ	¶390KΩ	0Ω	1.8Meg	1.8Meg	0Ω	0Ω	.1Ω	
V 12	6AU6	1.6Meg	0Ω	.1Ω	0Ω	†2KΩ	†6.9KΩ	120Ω		
V 13	6AU6	1.6Meg	0Ω	.1Ω	0Ω	†2KΩ	†6.7KΩ	150Ω		
V 14	6AU6	270KΩ	0Ω	.1Ω	0Ω	†2KΩ	†24KΩ	150Ω		
V 15	6AL5	0Ω	100KΩ	.1Ω	0Ω	200KΩ	0Ω	100KΩ		
V 16	12AU7	†160KΩ	560KΩ	1.5KΩ	0Ω	0Ω	†226KΩ	825KΩ	0Ω	.1Ω
V 17	6V6GT	0Ω	0Ω	†1.9KΩ	†1.5KΩ	270KΩ	Inf.	.1Ω	235Ω	
V 18	6AL7GT	3.3KΩ	.1Ω	†45Ω	1.5Meg	0Ω	0Ω	0Ω	3.3KΩ	
V 19	6BA6	2.8Ω	0Ω	0Ω	.1Ω	†2KΩ	†3KΩ	535Ω		
V 20	6AL5	7.1KΩ	7.1KΩ	0Ω	.1Ω	1Meg	0Ω	950KΩ		
V 21	6AU6	1.2Meg	0Ω	0Ω	.1Ω	†22KΩ	†3.9KΩ	0Ω		
V 22	6SN7GT	†1.2Meg	†8.2KΩ	0Ω	650KΩ	#1Meg	140Ω	.1Ω	0Ω	
V 23	6AU5GT	2.2Meg	0Ω	875Ω	Inf.	#3.6KΩ	Inf.	.1Ω	#28KΩ	
V 24	6AL5	975KΩ	500KΩ	0Ω	.1Ω	33KΩ	0Ω	500KΩ		
V 25	6BC5	1.4Meg	22Ω	0Ω	.1Ω	†22KΩ	†19KΩ	22Ω		
V 26	6AK6	220KΩ	0Ω	.1Ω	0Ω	†7.5KΩ	†47KΩ	1 8Ω		
V 27	6BG6G	Inf.	0Ω	80Ω	470KΩ	470KΩ	Inf.	.1Ω	¶5.3KΩ	TOP CAP #78Ω
V 28	6BG6G	Inf.	.1Ω	80Ω	Inf.	470KΩ	470KΩ	0Ω	¶5.3KΩ	TOP CAP #78Ω
V 29	5U4G	Inf.	100KΩ	Inf.	¶300Ω	Inf.	¶300Ω	INF	100KΩ	
V 30	5U4G	Inf.	3.7KΩ	Inf.	45Ω	Inf.	45Ω	Inf.	3.7KΩ	
V31	5U4G	Inf.	3.7KΩ	Inf.	47Ω	Inf.	47Ω	Inf.	3.7KΩ	
V32	6SN7GT	70KΩ	¶6.9KΩ	0Ω	1Meg	¶6.9KΩ	4.7KΩ	.1Ω	0Ω	
V33	6BG6G	Inf.	0Ω	80Ω	Inf.	29KΩ	Inf.	.1Ω	Inf.	TOP CAP ¶180Ω
V34	6BG6G	Inf.	0Ω	80Ω	Inf.	29KΩ	Inf.	.1Ω	Inf.	TOP CAP ¶180Ω
V35	6W6GT	Inf.	.1Ω	¶82Ω	¶82Ω	¶300KΩ	Inf.	0Ω	Inf.	
V36	6SJ7	Inf.	0Ω	¶25KΩ	1.2Meg	¶25KΩ	¶82Ω	.1Ω	¶300KΩ	
V37	0A3	Inf.	0Ω	Inf.	Inf.	¶25KΩ	Inf	Inf.	Inf.	
V38	1B3GT	PINS 1 THROUGH 8 HAVE INF RESISTANCE								TOP CAP ¶522Ω
V39	1B3GT	PINS 1 THROUGH 8 HAVE INF RESISTANCE								TOP CAP Inf.
V40	6AL5	■390KΩ	■68KΩ	0Ω	.1Ω	■470KΩ	Inf.	■390KΩ		
V41	6SN7GT	■470KΩ	†5KΩ	5.6KΩ	■390KΩ	†5KΩ	2.2KΩ	0Ω	.1Ω	
V42	6AL5	0Ω	†49KΩ	0Ω	2.4Ω	0Ω	Inf.	†49KΩ		
V43	5U4G	Inf.	41KΩ	Inf.	5.1Ω	Inf.	6.5Ω	Inf.	41KΩ	
V44	5U4G	Inf.	41KΩ	Inf.	5.1Ω	Inf.	6.5Ω	Inf.	41KΩ	
V45	30BP4	0Ω	1.3Meg	PIN 10 †250KΩ	PIN 11 †17KΩ	PIN 12 .1Ω				

ALL MEASUREMENTS TAKEN IN TV POSITION ONLY
ALL CONTROLS SET FOR NORMAL OPERATION
THE THREE RELAYS MUST BE IN THE CLOSED POSITION
† MEASURED FROM PINS 2 OF V30 & V31
# MEASURED FROM PIN 2 OF V29
¶ MEASURED FROM PINS 2 OF V43 & V44
■ MEASURED FROM - 12VDC LINE

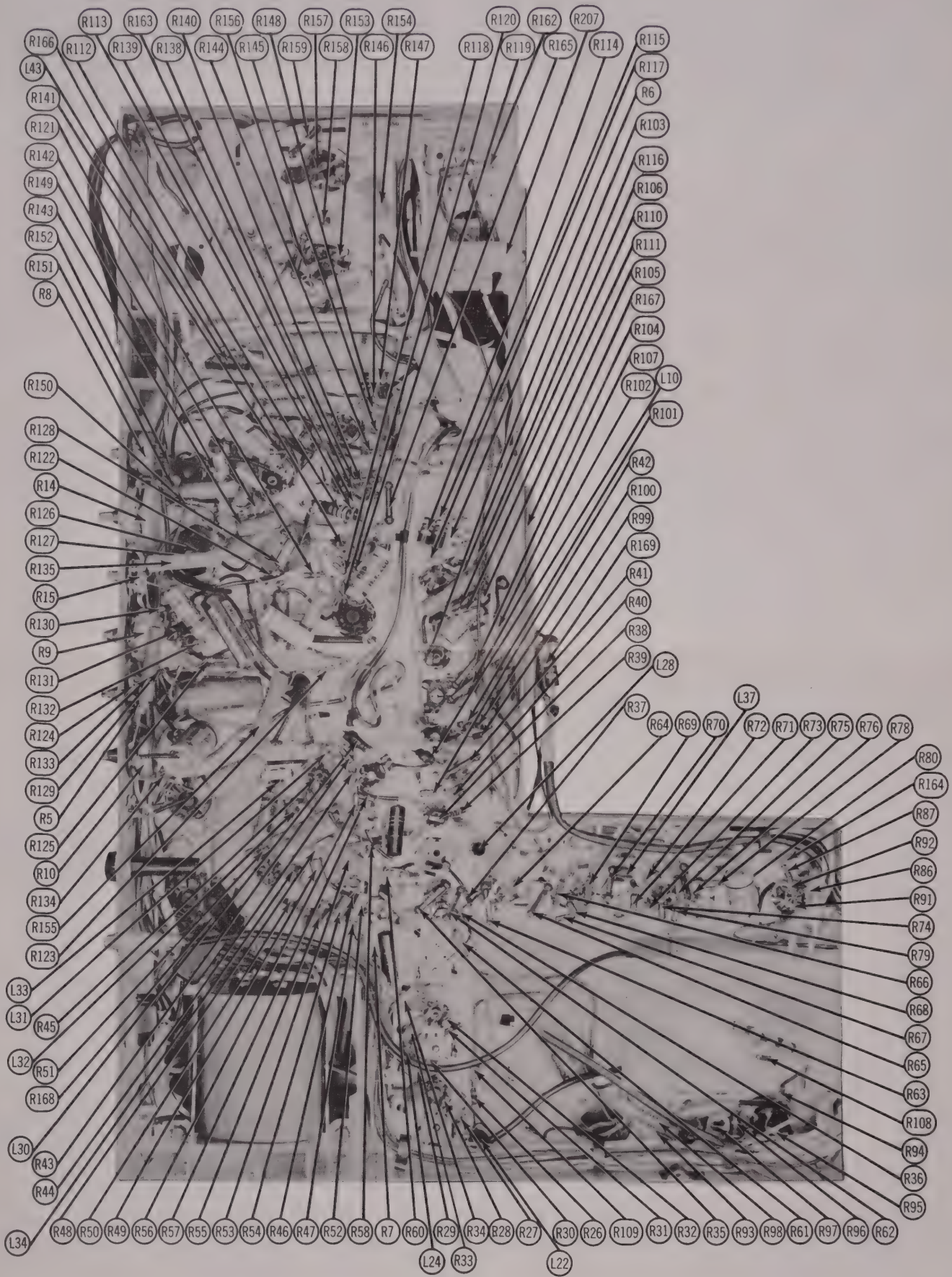


BOTTOM VIEW



TOP VIEW

TUBE PLACEMENT CHART - POWER SUPPLY CHASSIS



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		DUMONT PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	25000190	6J6	7BF	
V2	Mixer	25002020	6BC5	7BD	
V3	Oscillator	25001760	6AB4	5CE	
V4	1st. Video IF Amp.	25000050	6AU6	7BK	
V5	2nd. Video IF Amp.	25000050	6AU6	7BK	
V6	3rd. Video IF Amp.	25000050	6AU6	7BK	
V7	4th. Video IF Amp.	25002020	6BC5	7BD	
V8	Video Detector-DC Restorer	25000020	6AL5	6BT	
V9	Video Amplifier	25000240	6BA6	7BK	
V10	Video Output	25000340	6AQ5	7BZ	
V11	AGC Clamp Horiz Discharge	25000110	6SN7GT	8BD	
V12	1st Sound IF Amp.	25000050	6AU6	7BK	
V13	2nd Sound IF Amp.	25000050	6AU6	7BK	
V14	Limiter	25000050	6AU6	7BK	
V15	Discriminator	25000020	6AL5	6BT	
V16	AF Amplifier	25000130	12AU7	9A	
V17	Audio Output	25000090	6V6GT	7AC	
V18	Tuning Indicator	25000200	6AL7GT	8CH	
V19	1st Sync. Amp.	25000240	6BA6	7BK	
V20	Sync. Limiter AGC Rectifier	25000020	6AL5	6BT	
V21	Sync. Clipper	25000050	6AU6	7BK	
V22	2nd. Sync. Amp. Vert. Oscillator	25000110	6SN7GT	8BD	
V23	Vert. Output	25002770	6AU5GT	6CK	
V24	Horizontal Phase Discriminator	25000020	6AL5	6BT	
V25	Horizontal AFC	25002020	6BC5	7BD	
V26	Horiz. Oscillator	25000350	6AK6	7BK	
V27	Horiz. Output	25000140	6BG6G	5BT	
V28	Horiz. Output	25000140	6BG6G	5BT	
V29	Damper	25000060	5U4G	5T	
V30	LV Rectifier	25000060	5U4G	5T	
V31	LV Rectifier	25000060	5U4G	5T	
V32	HV Oscillator	25000110	6SN7GT	8BD	
V33	HV Pulse Amp.	25000140	6BG6G	5BT	
V34	HV Pulse Amp	25000140	6BG6G	5BT	
V35	HV Control	25002680	6W6GT	7AC	
V36	HV Control Amp.	25000270	6SJ7	8BD	
V37	Voltage Regulator	25000430	0A3	4AJ	
V38	HV Rectifier	25000150	1B3GT	3C	
V39	HV Rectifier	25000150	1B3GT	3C	
V40	Horiz. Failure Protection Rect. Vert. Failure Protection Rect.	25000020	6AU5	6BT	
V41	Failure protection control	25000110	6SN7GT	8BD	
V42	Relay Delay	25000020	6AL5	6BT	
V43	LV Rectifier	25000060	5U4G	5T	
V44	LV Rectifier	25000060	5U4G	5T	
V45	Picture Tube	25003000	30BP4	12D	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA			RTMA BASE TYPE	NOTES
	DUMONT PART No.	SYLVANIA PART No.	THOMAS PART No.		
V45	30BP4			12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	DUMONT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1	60	450	03017880	AFH 1-54		UP6045		TVL-2759	Filter
C2A	40	450	03018670	AFH 3-190		UPT4445		TVL-3813	▲ Filter
B	40	350							■ Vert. Osc. Dec.
C	25	50							▲ Not Used
C3	50	25	03000020	PRS25/50		BR502A		TVA-1206	Bias Filter
C4	10	25	03016730	PRS25/10		BR102A		TVA-1204	Bias Filter
C5	25	25	03015310	PRS25/25		BR252A		TVA-1205	Bias Filter
C6	40	350	03018680	AFH 1-40		UP4045		TVL-1622	Vert. Osc. Dec.
C7	10	450	03019410	PRS450/10		BR1045A		TVA-1705	Vert. Output Screen
C8	250	50	03103700	AFH 1-24 PRS 50/100		BRH5025			Vert. Output Cathode
C9	10	300	03019320	PRS350/12		BR1235A		TVA-1604	AFC Screen
C10	25	50	03013890	PRS50/25		BR255A		TVA-1306	Horiz. Output Cathode
C11	10	450	03019410	PRS450/10		BR1045A		TVA-1705	Damper Decoupling
C12A	30	450	03019330	AFH 3-35		UP3145			■ Decoupling
B	10	300				BR1015			▲ Decoupling
C	10	150							Decoupling
C13A	10	450	03018610	AFH 4-61		UPT11145C			▲ Audio Output Dec.
B	10	450							■ AF Amp. Plate
C	10	300							▲ Decoupling
D	50	25							Audio Output Cathode
C14A	10	450	03019150	AFH 4-10		UPT111145		TVL-4760	▲ Decoupling
B	10	450							■ Decoupling
C	10	450							▲ Video Output Screen
D	10	450							Video Amp. Screen
C15	25	25	03015310	PRS25/25		BR252A		TVA-1205	AF Amp. Cathode
C16	1.75	850				CRA85175			Power Trans. Shunt
C17	80	350	03016620	AFH 1-42		UP8040		TVL-1630	Filter
C18	80	350	03015320	AFH 1-42		UP8045		TVL-1630	Filter
C19A	40	475	03016050	AFH 2-72		UP4450		TVL-2830	▲ Filter
B	40	400							▲ Not Used
C20	8	250	03017440	PRS250/8		BR825		TVA-1503	Relay Shunt

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA DUMONT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C21	8	250	03017440	PRS250/8		BR825		TVA-1503	Relay Shunt
C22	8	250	03017440	PRS250/8		BR825		TVA-1503	Relay Shunt
C23	10	450	03019410	PRS450/10		BR1045A		TVA-1705	Decoupling
C24	1.5	950							Power Trans. Shunt
C25	20		03015790	SI20NP0	TCZ-20		NP0K-200		Fixed Trimmer
C26	15		03012050		TCZ-15		NP0K-150	5TCC-Q15	Fixed Trimmer
C27	8-50		03017500						Variable Trimmer
C28	20		03105790	SI20NP0	TCZ-20		NP0K-200		Fixed Trimmer
C29	470		03016480	SI470	D6-471		GP2K-471	5GA-T47	RF Amp. Cathode
C30	470		03016480	SI470	D6-471		GP2K-471	5GA-T47	AGC Filter
C31	470		03016480	SI470	D6-471		GP2K-471	5GA-T47	AGC Filter
C32	470		03016480	SI470	D6-471		GP2K-471	5GA-T47	RF Bypass
C33	100		03016700	SI100	D6-101		GP1K-101	5GA-T1	RF Coupling
C34	.5-5		03016650						Variable Trimmer
C35	100		03016700	SI100	D6-101		GP1K-101	5GA-T1	Fixed Trimmer
C36	137		03019960						Fixed Trimmer
C37	.5-5		03016650						Variable Trimmer
C38	100		03016700	SI100	D6-101		GP1K-101	5GA-T1	RF Coupling
C39	470		03016480	SI470	D6-471		GP2K-471	5GA-T47	AGC Filter
C40	470		03016480	SI470	D6-471		GP2K-471	5GA-T47	AGC Filter
C41	1		03012150		TCZ-1		NP0K-010		Osc. Coupling
C42	5		03014730	SI5NP0			NP0K-050		Osc. Grid Cap.
C43	1.5-7		03016870						Variable Trimmer
C44	470		03016480	SI470	D6-471		GP2K-471	5GA-T47	Osc. Fil.
C45	5000		03015610	BPD-005	DD-502		811-005	5HK-D5	Mixer Screen
C46	470		03016480	SI470	D6-471		GP2K-471	5GA-T47	Mixer Fil.
C47	5000		03015610	BPD-005	DD-502		811-005	5HK-D5	RF Bypass
C48	470		03016480	SI470	D6-471		GP2K-471	5GA-T47	Fil. Bypass
C49	470		03016480	SI470	D6-471		GP2K-471	5GA-T47	Fil. Bypass
C50	5000		03015610	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AGC Filter
C51	.05	200	03000950	P288-05	DF-503	PTE4S5		2TM-S5	AGC Filter
C52A	4000		03017790	BPD-2X004	D6-402	1D5D4	822-004	5HK-2D4	1st. Video IF Plate
B	4000				D6-402	1D5D4			1st. Video IF Screen
C53	5000		03015610	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AGC Filter
C54A	4000		03017790	BPD-2X004	D6-402	1D5D4	822-004	5HK-2D4	2nd. Video IF Plate
B	4000				D6-402	1D5D4			2nd. Video IF Screen
C55A	4000		03017790	BPD-2X004	D6-402	1D5D4	822-004	5HK-2D4	3rd. Video IF Plate
B	4000				D6-402	1D5D4			3rd. Video IF Screen
C56	5000		03015610	BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd. Video IF Cathode
C57	20		03013800	SI20NP0	TCZ-20		NP0K-200		Fixed Trimmer
C58	110	500	03020980						Decoupling
C59	5000		03015610	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Video IF Coupling
C60A	4000		03017790	BPD-2X004	D6-402	1D5D4	822-004	5HK-2D4	4th. Video IF Plate
B	4000				D6-402	1D5D4			4th. Video IF Screen
C61	5000		03015610	BPD-005	DD-502	1D5D5	811-005	5HK-D5	4th. Video IF Cathode
C62	10		03013080	SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Video Det. Filter
C63	.1	400	03019260	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C64	47		03015300		TCZ-47		NP0L-470	5TCC-Q47	Fixed Trimmer
C65	.25	400	03021840	P488-25		GT4P25		4TM-P25	Video Coupling
C66	.005	600	03018620	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Video Output Cathode
C67	.1	600	03014820	P688-1	DF-104	PTE6P1		6TM-P1	Video Coupling
C68	.047	200	03000950	P288-047	DF-503	PTE4S5		2TM-S47	Video Coupling
C69	.01	600	03014810	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	ACC. Anode Dec.
C70	.1	400	03019260	P488-1	DF-104	PTE4P1		4TM-P1	Picture Tube Cathode
C71	.05	200	03000950	P288-05	DF-503	PTE4S5		2TM-S5	AGC Filter
C72	.05	200	03000950	P288-05	DF-503	PTE4S5		2TM-S5	AGC Filter
C73	5000		03015610	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AGC Filter
C74	5000		03015610	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AVC Filter
C75	5000		03015610	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Sound IF Plate
C76	1500	500	03033560	1467-0015	D6-152	1W5D15	GP2L-152	1FM-215	1st. Sound IF Screen
C77	5000		03015610	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AVC Filter
C78	5000		03015610	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Sound IF Plate
C79	1500	500	03033560	1467-0015	D6-152	1W5D15	GP2L-152	1FM-215	2nd. Sound IF Screen
C80	5000		03015610	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AVC Filter
C81	.05	400	03015370	P488-05	DF-503	PTE4S5		4TM-S5	AVC Filter
C82	10		03018730	SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Sound IF Coupling
C83	5000		03015610	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Limiter Plate
C84	1500	500	03033560	1467-0015	D6-152	1W5D15	GP2L-152	1FM-215	Limiter Screen
C85	.05	200	03000950	P288-05	DF-503	PTE4S5		2TM-S5	Tuning Ind. Filter
C86	680	500	03012750	1479-0007	D6-681	1W5T7	GP2K-681	1FM-37	De-emphasis
C87	.02	400	03001460	P488-02	DF-203	PTE4S2		4TM-S2	Audio Coupling
C88	.01	400	03001450	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Tone Comp.
C89	.02	200	03018470	P488-02	DF-203	PTE4S2		2TM-S2	Tone Comp.
C90	.02	400	03001460	P488-02	DF-203	PTE4S2		4TM-S2	Audio Coupling
C91	.1	200	03013910	P288-1	DF-104	PTE4P1		2TM-P1	Bias Filter
C92	.02	600	03018570	P688-02	DF-203	PTE6S2		6TM-S2	Audio Coupling
C93	.002	600	03014670	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Tone Comp.
C94	.005	600	03018620	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Tone Comp.
C95	.05	600	03015370	P688-05	DF-503	PTE6S5		6TM-S5	Audio Coupling
C96	.002	600	03014670	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Audio Output Plate
C97	47	500	03020080	1468-00005	D6-470	5W5Q5	GP1K-470	1FM-45	Sync. Coupling
C98	5000		03015610	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Sync. Amp. Plate
C99	820	500	03033530						Sync. Amp. Screen
C110	.05	200	03000950	P288-05	DF-503	PTE4S5		2TM-S5	Sync. Amp. Cathode
C101A	4000		03017790	BPD-2X004	D6-402	1D5D4	822-004	5HK-2D4	RF Bypass
B	4000				D6-402	1D5D4			RF Bypass
C102	5000		03015610	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AGC Filter
C103	33		03018690	SI33	D6-330		GP1K-330	5GA-Q33	Sync. Limiter Cathode
C104	.1	200	03013910	P288-1	DF-104	PTE4P1		2TM-P1	Sync. Coupling *
C105	.1	200	03013910	P288-1	DF-104	PTE4P1		2TM-P1	Sync. Coupling
C106	5000		03015610	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C107	.1	200	03013910	P288-1	DF-104	PTE4P1		2TM-P1	Sync. Coupling
C108	.002	600	03014670	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Vert. Integrator Net.
C109	.005	600	03018620	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Vert. Integrator Net.
C110	.02	400	03001460	P488-02	DF-203	PTE4S2		4TM-S2	Vert. Integrator Net.
C111	.01	600	03014810	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Vert. Osc. Grid Cap.
C112	.15	600	03019940	684-15					Vert. Discharge
C113	.1	600	03014820	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C114	.01	600	03014810	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Vert. Output Plate
V115	.2	1000	03018750						Vert. Output Dec.
C116	100	500	03020430	1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	Horiz. Sync. Coupling
C117	12000	500	03018240						Fixed Trimmer
C118	20		03015790	SI20NP0	TCZ-20		NP0K-200		Balancing
C119	.005	600	03018620	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Horiz. Sync. Coupling
C120	.1	200	03013910	P288-1	DF-203	PTE4P1		2TM-P1	AFC Grid

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA DUMONT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C121	.005	600	03018620	P488-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	AFC Plate
C122	10000	500	03034420	1467-01	D6-103	1D3S1	GP2-333-103	1FM-11	AFC Cathode
C123	.05	600	03015370	P488-05	DF-503	PTE6S5		6TM-S5	RF Bypass
C124	.002	600	03014670	P488-002	D6-202	PTE6D3	GP2-333-202	6TM-D3	AFC Coupling
C125	.05	600	03015370	P488-05	DF-503	PTE6S5		6TM-S5	Horiz. Osc. Screen
C126	330	500	03020490	1468-00035	D6-331		GP2K-331	1FM-335	Horiz. Sweep Coupling
C127	01	400	03001450	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Horiz. Sweep Coupling
C128	430	500	03055830						Horiz. Discharge
C129	.01	600	03014810	P488-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Horiz. Sweep Coupling
C130	.1	600	03014820	P488-1	DF-104	PTE6P1		6TM-P1	Horiz. Output Screen
C131	.03	200	03018580	P488-03		PTE6S3		6TM-S3	Damper Filter
C132	.1	200	03013910	P288-1	DF-104	PTE4P1		2TM-P1	Damper Filter
C133	220	2000	03016940						Fixed Trimmer
C134	220	2000	03016940						Fixed Trimmer
C135	220	2000	03016940						Fixed Trimmer
C136	220	2000	03016940						Fixed Trimmer
C137	.1	600	03014820	P488-1	DF-104	PTE6P1		6TM-P1	Horiz. Sweep Coupling
C138	68	1500	03016895						Horiz. Sweep Coupling
C139	.01	600	03014810	P488-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Voltage Divider
C140	1000	500	03033180	1468-001	D6-102		GP2L-102		Horiz. Sweep Coupling
C141	.1	200	03013910	P288-1	DF-104	PTE4P1		2TM-P1	HV Osc. Cathode
C142	270	500	03020170	1469-0003		SR5T3		MS-33	HV Osc. Feedback
C143	1000	500	03033180	1468-001	D6-102	1W5D1	GP2L-102	1FM-21	Voltage Divider
C144	.05	600	03015370	P488-05	DF-503	PTE6S5		6TM-S5	HV Pulse Coupling
C145	.1	600	03019250	P488-1	DF-104	PTE6P1		6TM-P1	HV Control Cathode
C146	1000	500	03033180	1468-001	D6-102	1W5D1	GP2L-102	1FM-21	HV Control Amp. Grid
C147	500	20000	03014880	HV 30A	TV3-502		410-501		HV Doubler
C148	500	20000	03014880	HV 30A	TV3-502		410-501		HV Filter
C149	500	30000	03101510						HV Filter
C150	500	30000	03101510						HV Filter
C151	.005	600	03018630	P488-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Horiz. Sweep Coupling
C152	.1	200	03018720	P288-1	DF-104	PTE4P1		2TM-P1	Voltage Divider
C153	.05	1000	03015370	P1088-05		GT1S5		MB-S5	Vert. Sweep Coupling
C154	.05	200	03000950	P288-05	DF-503	PTE4S5		2TM-S5	Integrator Net.
C155	.01	200	03014900	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Integrator Net.
C156	.1	200	03018720	P288-1	DF-104	PTE4P1		2TM-P1	Voltage Divider
C157	.01	600	03014810	P488-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	RF Bypass *
C158	5000		03015810	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Bias Filter
C159	.02	600	03018570	P488-02	DF-203	PTE6S2		6TM-S2	Line Filter
C160	.02	600	03018570	P488-02	DF-203	PTE6S2		6TM-S2	Line Filter
C161	5000		03015810	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass *

* Not Used In All Models

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA DUMONT PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB	INSTALLATION NOTES
R1A	500KΩ	½	01025700		AT-92		Volume Control and Switch Tapped @ 150K-250KΩ
B	Shaft				FS-3		Attach to R1A per. instructions
C	Switch				SW-A		Attach to R1A per instructions
			Concentrikit				
R2A	500KΩ	½	01028700		RTV-151		Tone Control-Bass-Panel
B	250K		813-137*				Tone Control-Treble-Rear
C	Shaft End		813-137*				Attach per instructions in "Concentrikit"
			E-202*				
R3A	100KΩ	½	01027200	Q11-128	AM-49-S	B-40	Brightness Control
B	Shaft		Not Req.	FS-3	Not Req.	Not Req.	Attach to R3A per instructions
R4A	1Meg	½	01007520	Q11-137	AG-61-S	AN-89	Vertical Hold Control
B	Shaft		Not Req.	FKS-1/4	AK-1		Attach to R4A per instructions
R5A	25KΩ	½	01009620	Q11-120	AG-40-S	B-26	AGC Control
B	Shaft		Not Req.	RQ	FKS-1/4	File Slot	Attach to R5A per instructions
R6A	500KΩ	½	01007400	Q11-133	AG-58-S	B-59	CRT Sensitivity Control
B	Shaft		Not Req.	RQ	FKS-1/4	File Slot	Attach to R6A per instructions
R7	1500Ω	25	01028100		RTV-177		Focus Control-Wire-Wound
R8	20KΩ	½	01007650	Q11-119	M-36-S		Horizontal Drive Control
R9	1500Ω	½	01024620	WK-1500	RTV-22	V-129	Vertical Linearity Control NO.1.
R10A	50KΩ	1	01034137	Q11-123	AG-44-S	AN-31	Vertical Linearity Control NO.2.
B	Shaft		Not Req.	Not Req.	RS-3	AK-1	Attach to R10A per instructions
R11A	2Meg	1	01006720	Q11-139	AM-83-S	AN-75	HV Regulator Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R11A per instructions
R12A	50KΩ	2	01007610		AM-44-S	AN-31	Frequency Control
B	Shaft				FKS-1/4	AK-1	Attach to R12A per instructions
R13A	50KΩ	2	01007610		AM-44-S	AN-31	Drive Control
B	Shaft				FKS-1/4	AK-1	Attach to R13A per instructions
R14	10KΩ	2	01022480	W-10000	43-10000	VK-137	Horizontal Size Control-Wire Wound.
R15A	3Meg	½	01029800	BQ11-140	AG-85-S	AN-84	Vertical Size Control
B	Shaft			Not Req.	FSK-1/4	AK-1	Attach to R15A per instructions.
R16A	1500Ω	2	01033600	WK-1500	AG-11-S	B-6	Contrast Control
B	Shaft			Not Req.	FS-3	Not Req.	Attach to R16A per instructions

*NOTE: Additional parts to be used with "Concentrikit"

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Dumont PART No.	IRC PART No.	IDENTIFICATION CODES All resistors ± 10% unless otherwise specified
R17	82Ω	½	02031640	BTS-82	RF Amplifier Cathode
R18	10KΩ	2	02037890		RF Amplifier Plate Load
R19	100KΩ	½	02032010		AGC Network
R20	2KΩ	½	02031900		RF Coil Shunt
R21	100KΩ	½	02032010		AGC Network
R22	1Meg	½	02032130		Mixer Grid
R23	50KΩ	½	[illegible]		Mixer Screen SEE NOTE 10
R24	10KΩ	2	[illegible]		Oscillator Plate Load
R25	2KΩ	½	[illegible]		Oscillator Grid
R26	10KΩ 20%	½	[illegible]		AGC Network
R27	2700Ω 5%	½	[illegible]	BTS-2700 5%	1st. Video IF Grid
R28	39Ω	½	[illegible]		1st. Video IF Cathode
R29	68KΩ	1	[illegible]	BTA-68K	1st. Video IF Screen
R30	3300Ω	1	[illegible]	BTA-3300	1st. Video IF Plate Load
R31	10KΩ 20%	½	02031890	BTS-10K	AGC Network
R32	39Ω	½	[illegible]		2nd. Video IF Cathode
R33	68KΩ	1	[illegible]	BTA-68K	2nd. Video IF Screen

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA DUMONT PART No.	IRC PART No.	IDENTIFICATION CODES
R34	3300Ω	1	02034830	BTA-3300	2nd. Video IF Plate Decoupling
R35	120Ω	½	02031660	BTS-120	3rd. Video IF Cathode
R36	1000Ω	½	02031770	BTS-1000	3rd. Video IF Screen
R37	1000Ω	½	02031770	BTS-1000	3rd. Video IF Plate Decoupling
R38	6800Ω	½	02031870	BTS-6800	4th. Video IF Grid
R39	2.2Ω 5%	½	02031690	BTS-220 5%	4th. Video IF Cathode
R40	1000Ω	½	02031770	BTS-1000	4th. Video IF Screen
R41	1000Ω	½	02031770	BTS-1000	4th. Video IF Plate Decoupling
R42	68KΩ	½		BTS-68K	Video IF Coil Shunt
R43	10KΩ 5%	½	02030720	BTS-10K 5%	Video Detector Load
R44	10KΩ 5%	½	02030720	BTS-10K 5%	Video Amplifier Grid
R45	33Ω 20%	½	02031590		Video Amplifier Cathode
R46	100KΩ 5%	1		BTA-100K 5%	Video Amplifier Screen SEE NOTE 1
R47	100KΩ 5%	1		BTA-100K 5%	Video Amplifier Screen SEE NOTE 2
R48	2700Ω 5%	½	02030580	BTS-2700 5%	Video Amplifier Plate Load
R49	3300Ω	1	03034830	BTA-3300	Video Amplifier Plate Decoupling
R50	100kΩ5%	½	02032010	BTS-100K 5%	Video Output Grid
R51	33Ω 20%	½	02031590		Video Output Cathodode
R52	27KΩ	1	02034940	BTA-27K	Video Output Screen
R53	2250Ω	10	02122470	1 3/4-2250	Video Output Plate Load Wire-Wound
R54	1500Ω	2	02037790	BTE-1500	Decoupling
R55	1500Ω	2	02037790	BTE-1500	Decoupling
R56	270KΩ	½	02032060	BTS-270K	Picture Tube Grid
R57	1Meg	½	02032130	BTS-1Meg	Picture TubeGrid
R58	10KΩ 20%	½	02031890	BTS-10K	Video Peaking
R59	220KΩ	½	02032050	BTS-220K	Voltage Divider
R60	560KΩ	1	02032100	BTA-560K	Voltage Divider
R61	100KΩ	½	02032010	BTS-100K	AVC Network
R62	47KΩ	½	02031970	BTS-47K	Sound IF Transformer Shunt
R63	120Ω	½	02031660	BTS-120	1st. Sound IF Cathode
R64	4700Ω	½	02031850	BTS-4700	1st. Sound IF Screen
R65	1000Ω	½	02031770	BTS-1000	1st. Sound IF Plate Decoupling
R66	100KΩ	½	02032010	BTS-100K	AVC Network
R67	100KΩ 5%	½	02032010	BTS-100K 5%	Sound IF Transformer Shunt
R68	150Ω 5%	½	02031670	BTS-150 5%	2nd. Sound IF Cathode
R69	4700Ω	½	02031850	BTS-4700	2nd. Sound IF Screen
R70	1000Ω	½	02031770	BTS-1000	2nd. Sound IF Plate Decoupling
R71	100KΩ 5%	½	02032010	BTS-100K 5%	Sound IF Transformer Shunt
R72	1.2Meg	½	02032140	BTS-1.2Meg	AVC Network
R73	270KΩ	½	02032060	BTS-270K	Limiter Grid
R74	150Ω 5%	½	02031670	BTS-150 5%	Limiter Cathode
R75	22KΩ	½	02031930	BTS-22K	Limiter Screen
R76	1000Ω	½	02031770	BTS-1000	Limiter Plate Decoupling
R77	3300Ω			BTS-3300	Tuning Indicator Cathode
R78	100KΩ	½	02032010	BTS-100K	Discriminator Diode Load
R79	100KΩ	½	02032010	BTS-100K	Discriminator Diode Load
R80	100KΩ	½	02032010	BTS-100K	De-emphasis
R81	1.2Meg	½	02032140	BTS-1.2Meg	Tuning Indicator Filter
R82	680KΩ 20%	½	02042110	BTS-680K	Tone Compensation
R83	22KΩ	½	02031930	BTS-22K	Tone Compensation
R84	47KΩ	½	02031970	BTS-47K	Tone Compensation
R85	100KΩ	½	02032010	BTS-100K	Tone Compensation
R86	560KΩ	1	02032100	BTA-560K	1st. Audio Amplifier Grid
R87	220KΩ	½	02032050	BTS-220K	1st. Audio Amplifier Plate Load
R88	47KΩ	½	02031970	BTS-47K	Tone Compensation
R89	47KΩ	½	02031970	BTS-47K	Tone Compensation
R90	560KΩ	1	02032100	BTA-560K	Tone Compensation
R91	1500Ω	½	02031790	BTS-1500	2nd. Audio Amplifier Cathode
R92	220KΩ 20%	½	02032050	BTS-220K	2nd. Audio Amplifier Plate Load
R93	5600Ω	½	02031860	BTS-5600	Decoupling
R94	390KΩ 5%	½	02031100	BTS-390K 5%	Feedback
R95	270KΩ	½	02032060	BTS-270K	Audio Output Grid
R96	470Ω	1	02034730	BTA-470	Audio Output Cathode
R97	470Ω	1	02034730	BTA-470	Audio Output Cathode
R98	1450Ω	7	02121300	1 3/4A-1450	Voltage Divider Wire-Wound
R99	68Ω	½	02031630	BW-½-68	Sync. Amplifier Cathode
R100	470Ω	½	02031730	BTS-470	Sync. Amplifier Cathode
R101	1000Ω	½	02031770	BTS-1000	Sync. Amplifier Screen
R102	1000Ω	½	02031770	BTS-1000	Sync. Amplifier Plate Decoupling
R103	27KΩ	½		BTS-27K	Sync. DetectorDiode Load SEE NOTE 3
R104	1000Ω	½	02031770	BTS-1000	Sync. Detector Decoupling
R105	680KΩ 20%	½	02042110	BTS-680K	AGC Network
R106	270KΩ	½	02032060	BTS-270K	AGC Network
R107	1.2Meg	½	02032140	BTS-1.2Meg	AGC Network
R108	8.2Meg	½		BTS-8.2Meg	AGC Network SEE NOTE 4
R109	1.2Meg	½	02032140	BTS-1.2Meg	AGC Network
R110	10KΩ 20%	½	02031890	BTS-10K	Sync. Coupling
R111	1Meg	½	02032130	BTS-1Meg	Sync. Coupling SEE NOTE 2
R112	4300Ω	2			Voltage Divider SEE NOTE 5
R113	4300Ω	2			Voltage Divider SEE NOTE 2
R114	4300Ω	2			Voltage Divider SEE NOTE 5
R115	4300Ω	2			Voltage Divider SEE NOTE 2
R116	1.2Meg	½	02032140	BTS-1.2Meg	Sync. Clipper Grid
R117	22KΩ	½	02031930	BTS-22K	Sync. Clipper Plate Load
R118	1.2Meg	½	02032140	BTS-1.2Meg	Sync. Amplifier Grid
R119	4700Ω	½	02031850	BTS-4700	Sync. Amplifier Plate Load
R120	10KΩ	½	02031890	BTS-10K	Integrator Network
R121	10KΩ	½	02031890	BTS-10K	Integrator Network
R122	10KΩ	½	02031890	BTS-10K	Integrator Network
R123	470KΩ	½	02032090	BTS-470K	Vertical Oscillator Grid
R124	1.2Meg	½	02032140	BTS-1.2Meg	Vertical Hold Control Shunt
R125	820KΩ 5%	½	02031180	BTS-820K 5%	Vertical Oscillator Plate Load
R126	100KΩ 5%	1	02035540	BTA-100K 5%	Voltage Divider SEE NOTE 6
R127	100KΩ 5%	1	02035540	BTA-100K 5%	Voltage Divider SEE NOTE 2
R128	220KΩ	1	02035050	BTA-220K	Voltage Divider
R129	2700Ω 5%	½	02030580	BTS-2700 5%	Vertical Peaking
R130	2.2Meg	½	02032170		Vertical Output Grid
R131	820Ω 5%	2	07037780	BTB-820 5%	Vertical Output Cathode
R132	220KΩ	1	02035050	BTA-220K	Vertical Peaking
R133	68KΩ	2	02047990	BTB-68K	Voltage Divider
R134	33KΩ	2	02037950	BTB-33K	Voltage Divider
R135	3000Ω	10		1 3/4A-3000	Voltage Divider Wire-Wound SEE NOTE 7
R136A	850Ω			1 3/4A-800	Voltage Divider Wire-Wound
B	1200Ω		02121400	1 3/4A-1200	Voltage Divider Wire-Wound
C	1975Ω			1 3/4-A-2000	Voltage Divider Wire-Wound
R137	2250Ω	10	02122470	1 3/4-A-2250	Voltage Divider Wire-Wound
R138	470KΩ	½	02032090	BTS-470K	Horizontal Phase Detector Load

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA DUMONT PART No.	IRC PART No.	IDENTIFICATION CODES
R139	470KΩ	½	02032090	BTS-470K	Horizontal Phase Detector Load
R140	470KΩ	½	02032090	BTS-470K	Horizontal AFC Filter
R141	220KΩ 5%	½	02032050	BTS-220K 5%	Horizontal Oscillator Grid
R142	47KΩ	1	02034970	BTA-47K	Horizontal Oscillator Screen
R143	7500Ω	5	02112370	1 3/4A-7500	Horizontal Oscillator Plate Load Wire-Wound
R144	470Ω	½	02031730	BTS-470	Horizontal AFC Grid
R145	22Ω 20%	½	02031570	BW-½-22	Horizontal AFC Cathode
R146	68KΩ	2	02037990	BTB-68K	Horizontal AFC Screen
R147	22KΩ	2	02037930	BTB-22K	Horizontal AFC Plate Load
R148	27KΩ	1	02034940	BTA-27K	Bleeder
R149	6800Ω 5%	½	02030680	BTS-6800 5%	Differentiator
R150	220KΩ 5%	½	02032050	BTS-220K 5%	Horizontal Discharge Grid
R151	390KΩ	1	02035080	BTA-390K	Horizontal Discharge Plate Load
R152	6800Ω	½	02031870	BTS-6800	Voltage Divider
R153	470KΩ	½	02032090	BTS-470K	Horizontal Output Grid
R154	80Ω	5	02112530		Horizontal Output Cathode Wire-Wound
R155	5000Ω	10	02122550	13/4A-5000	Horizontal Output Screen Wire-Wound
R156	120Ω	½	02031660		Parasitic Suppressor
R157	68Ω	1	02034630		Parasitic Suppressor
R158	68Ω 20%	½	02031630		Parasitic Suppressor
R159	120Ω	½	02031660		Parasitic Suppressor
R160	68Ω	1	02034630		Parasitic Suppressor
R161	68Ω 20%	½	02031630		Parasitic Suppressor
R162	5.1Ω	1	02102650		Parasitic Suppressor Wire-Wound
R163	33KΩ	½	02031950	BTS-33K	Bias Network
R164	270KΩ	½	02032060	BTS-270K	Bias Network
R165	220KΩ	½	02032050	BTS-220K	Bias Network
R166	10KΩ 20%	½	02031890	BTS-10K	Bias Network
R167A	90Ω	11	02121500		Bias Network Wire-Wound
B	56Ω	3			Bias Network Wire-Wound
R168	100KΩ	1	02035540	BTA-100K	Line Isolation
R169	130Ω 5%	2			Bias Network SEE NOTE 2
R170	1Meg	½	02032130	BTS-1Meg	Horizontal Sweep Coupling
R171	68KΩ	1	02034990	BTA-68K	Horizontal Rectifier Load
R172	470KΩ	½	02032090	BTS-470K	Horizontal Protection Grid
R173	5600Ω	1	02034860	BTA-5600	Horizontal Protection Cathode
R174	10KΩ	½	02031890	BTS-10K	Vertical Sweep Coupling
R175	390KΩ	½	02032080	BTS-390K	Vertical Rectifier Load
R176	390KΩ	½	02032080	BTS-390K	Vertical Protection Grid
R177	2200Ω	½	02031810	BTS-2200	Vertical Protection Cathode
R178	100Ω	10		1 3/4A-100	Decoupling Wire-Wound SEE NOTE 8
R179	100Ω	10		1 3/4A-100	Decoupling Wire-Wound SEE NOTE 2
R180	1Meg	½	02032130	BTS-1 Meg	H.V. Oscillator Grid
R181	4700Ω 5%	½	02033640	BTS-4700 5%	H.V. Oscillator Cathode
R182	15KΩ 5%	½	02030706	BTS-15K 5%	H.V. Oscillator Grid
R183	6800Ω	2	02037870	BTB-6800	H.V. Oscillator Plate Load
R184	1000Ω	½	02031770	BTS-1000	H.V. Amplifier Grid
R185	80Ω	5	02112530		H.V. Amplifier Cathode Wire-Wound
R186	6000Ω	20	02017840	2D-6000	H.V. Amplifier Screen Wire-Wound
R187	100Ω	½	02031650		Parasitic Suppressor
R188	100Ω	½	02031650		Parasitic Suppressor
R189	33Ω 5%	1	02034590		Parasitic Suppressor
R190	33Ω 5%	1	02034590		Parasitic Suppressor
R191	300KΩ 5%	½	02031070		Voltage Control Plate Load
R192	25KΩ	10	02108110	1 3/4A-25K	Voltage Control Cathode Wire-Wound
R193	500Meg	½	02126000		Voltage Divider
R194	1Meg	½	02032130	BTS-1Meg	Voltage Divider
R195	100KΩ	2			H.V. Rectifier Load SEE NOTE 9
R196	180KΩ	2			H.V. Rectifier Load SEE NOTE 9
R197	330KΩ	2			H.V. Rectifier Load SEE NOTE 9
R198	470KΩ	2	02038090		H.V. Rectifier Load
R199	560KΩ	2			H.V. Rectifier Load SEE NOTE 9
R200	820KΩ	2			H.V. Rectifier Load SEE NOTE 9
R201	150KΩ	2	02038030		H.V. Filter
R202	22KΩ	2	02037930	BTB-22K	Current Limiter
R203	22KΩ	2	02037930	BTB-22K	Current Limiter
R204	5.1Ω	1	02102650		Filament Dropping Wire-Wound
R205	150KΩ	2	02038030	BTB-150K	Bleeder
R206	150KΩ	2	02038030	BTB-150K	Bleeder
R207	6000Ω	20	02017840	2D-5000	Bleeder SEE NOTE 11

NOTE 1: Some models may use a 56KΩ resistor in this application.
NOTE 2: Not used ina all models.
NOTE 3: Some models may use an 18KΩ resistor in this application.
NOTE 4: Some models may use a 10Meg resistor in this application.
NOTE 5: Some models may use a 2200Ω resistor in this application.
NOTE 6: Some models may use a 220KΩ resistor in this application.
NOTE 7: Some models may use a 5KΩ resistor in this application.
NOTE 8: Some models may use a 200Ω resistor in this application.
NOTE 9: Some models may use a 470KΩ resistor in this application.
NOTE 10: Some models may use a 150KΩ resistor in this application.
NOTE 11: Some models may use a 5000Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA DUMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC	780VCT	5VAC	6.3VAC	20004961			
	@ 2.5A	@ .315A	@ 6.0A	@ 5.7A				
T2	117VAC	980VCT	5VAC	6.3VAC	20005621			
	@2.7A	@ .380A	6.0A	@5.0A				
T3	117VAC	5VCT			20005840	P-3026 ①	P-3040 ①	FO-53
	@ .2A	@3.0A						

① Drill New Mounting Holes

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA DUMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T4	44Ω	74Ω	20005591				H.V. Pulse Osc. Trans.
T5	440Ω Tapped ④ 40Ω	SEC. 1 0Ω SEC. 2 0Ω	20006471				H.V. Trans.
T6	160Ω	1000Ω	20004723	A-8122	A-4003	TB0-1①	Vert. Blocking Osc.
T7	5Ω	5.5Ω Tapped ④2.9Ω & 4.5Ω	20005611				Horiz. Output Trans.
T8	580Ω	7Ω	20005662	A-8112②	A-3038① MF-4		Vert. Output Trans.
T9A	1lΩ		87000191				Horiz. Deflection Coils
B	50Ω						Vert. Deflection Coils
T10	825Ω		21005343				Focus Coil

① Drill New Mounting Holes
② Drill One New Mounting Hole

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA DUMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T11	6.5KΩ	4.2Ω	400Ω	.5Ω	Part of 18002791	A-3824	A-3019②	RO-201②	② Drill One New Mounting Hole

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	REPLACEMENT DATA DUMONT PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	PM	4.2Ω	Part of 18002791	10J12	10A4A	
	CONE DIA.	V. C. DIA.				
SP2	$9\frac{1}{2}$"	1"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ↺)	REPLACEMENT DATA DUMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.315A	45Ω	2.2H	21005212	C-2326②	C-2996①	TR-3300	① Drill New Mounting Holes
L2	.380A	82Ω	5.5H	21004022		C-3190 ①		② Drill New Mounting Hole

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA DUMONT PART No.	MERIT PART No.	NOTES
L3	Ant. Trans.	0Ω	0Ω	20004592		
L4	Ant. Loading Coil	.4Ω		21005801		
L5	Ant. Coil	.1Ω				
L6	Ant. End Ind.	0Ω		21005721		
L7	Fil. Choke	0Ω		21005421		
L8	Cath. Choke	.3Ω		21005741		
L9	RF End Ind.	0Ω		21005722		
L10	RF Coil	0Ω				
L11	Band Pass Coil	0Ω		21005731		
L12	Mixer Grid End Ind.	0Ω		21005081		
L13	Mixer Grid Coil	0Ω				
L14	Band Pass Coil	0Ω		21005521		Not used in all models
L15	Band Pass Coil Shunt	0Ω		35009601		Not used in all models
L16	RF Choke	0Ω		21005421		
L17	Osc. Coil	0Ω				
L18	Osc. End Ind.	0Ω		21005111		
L19	Osc. Shunt	0Ω		21005131		
L20	Fil. Choke	0Ω		21005421		
L21	Conv. Plate Coil	.3Ω	.1Ω	21005911		Includes Trap
L22	Video IF Coupling	0Ω		21006781		
L23	1st. Video IF	.2Ω		20005211		Includes Trap
L24	Fil Choke	.2Ω		21005601		
L25	2nd. VideoIF	.7Ω	.7Ω	20005801		
L26	3rd. Video IF	.7Ω	.7Ω	20005781		
L27	4th Video IF	.5Ω	.5Ω	20005791		
L28	Sound Trap	.1Ω		21004801		
L29	5th. Video IF	.8Ω	.5Ω	20005821		
L30	Peaking Coil	2.6Ω		21006621		Black Dot 24Microhenries
L31	Peaking Coil	8.3Ω		21006624		Orange Dot 166Microhenries
L32	Peaking Coil,	7.2Ω		21006623		Red Dot 142 Microhenries
L33	4.5MC Trap	2.7Ω		21004831		
L34	Peaking Coil	7.2Ω		21006622		Brown Dot 110Microhenries
L35	1st. Sound IF	.2Ω	.2Ω	20004511		
L36	2nd. Sound IF	.2Ω	.2Ω	20004511		

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF) CONT.

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	DUMONT PART No.	MERIT PART No.	
L37	Fil. Choke	.2Ω		21005601		
L38	3rd. Sound IF	.2Ω	.2Ω	20004511		
L39	Discrim. Trans.	.3Ω	.3Ω	20004441		Tap at .2Ω
L40	RF Choke	2.6Ω		21006621		
L41	Sync. Det. Trans.	.1Ω	.1Ω	20005251		
L42	Horiz. Osc.	58Ω	58Ω	20003923		Primary Tap At 33Ω-Secondary Tap At 18Ω
L43	Horiz. Lin.	7.7Ω		21005491		Tap at 3.1Ω

FUSES

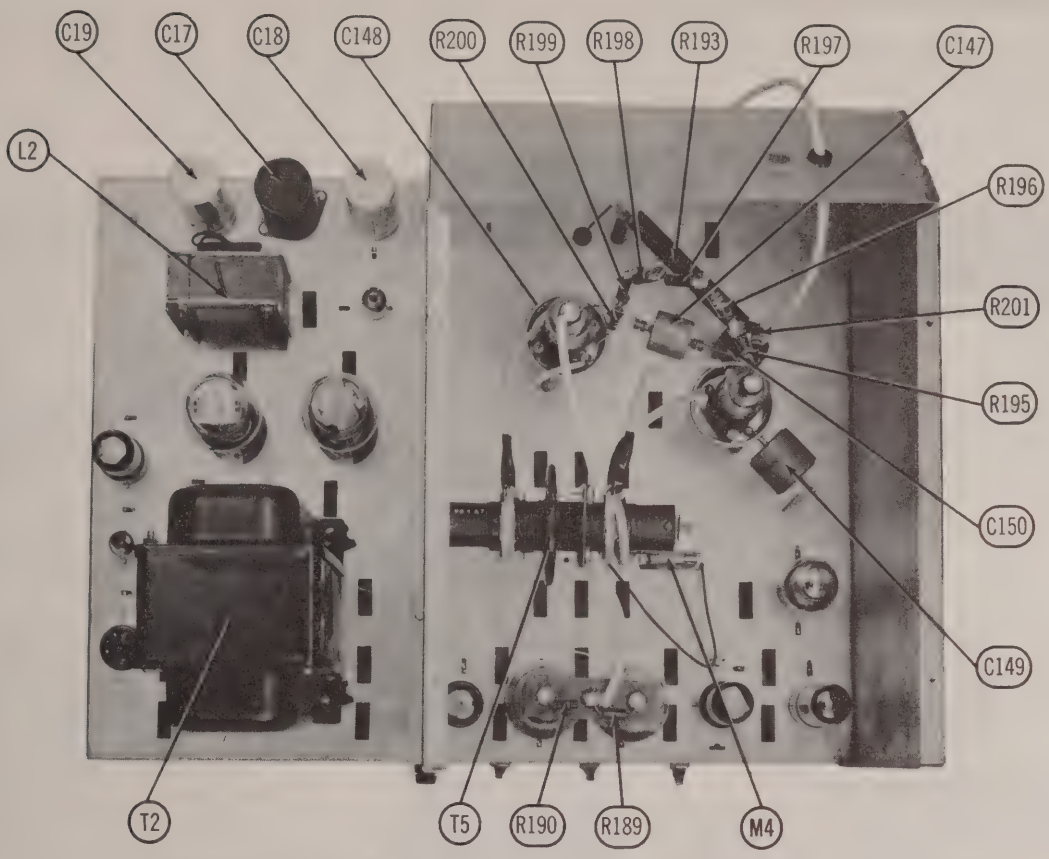
ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			DUMONT PART No		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	5A	11000810	11000600	313005	341001	
M2	3AG	3/8A	11000730	11000550	312.375	357001	
M3	3AG	5A	11000810	11000600	313005	341001	
M4	3AG	3/8A	11000730	11000550	312.375	357001	

DIAL LIGHTS

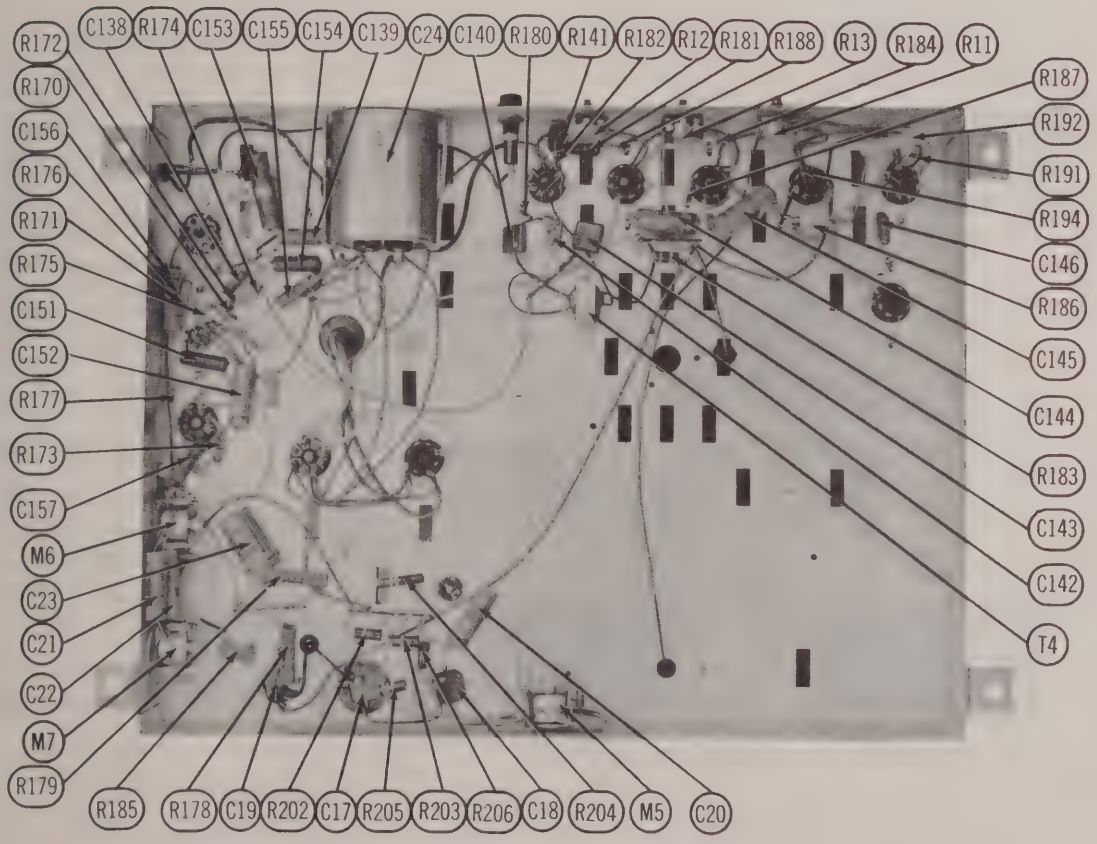
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					DUMONT PART No.		
M8	Bayonet	6-8	.15	Brown	12002770		Type number 47.
M9	Bayonet	6-8	.15	Brown	12002770		Type number 47.

MISCELLANEOUS

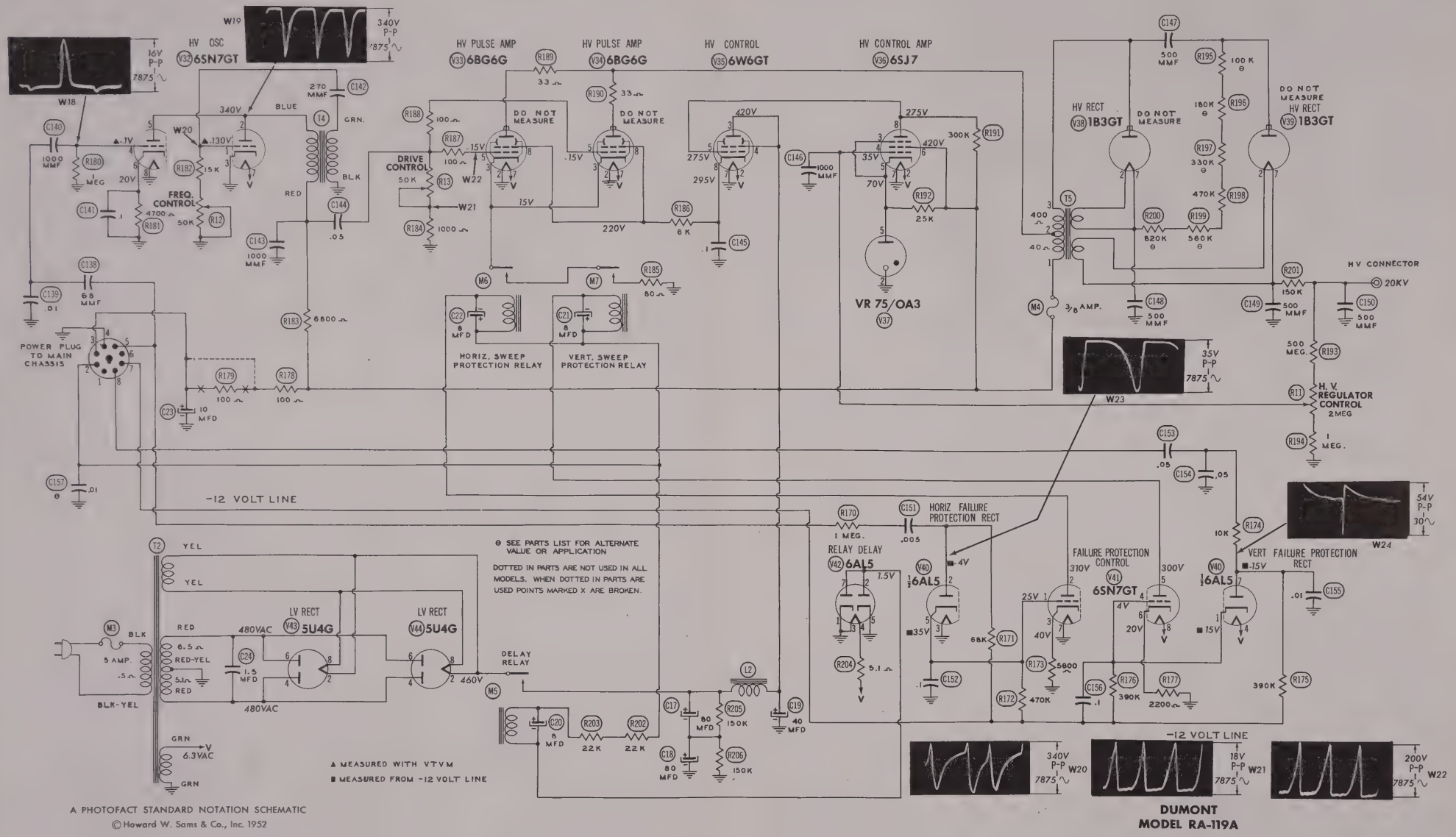
ITEM No.	PART NAME	DUMONT PART No.	NOTES
M5	Relay	05003260	B+ Delay Relay
M6	Relay	05003260	Horiz. Sweep Protection
M7	Relay	05003260	Vert. Sweep Protection
M10	RF Tuner	69003022	
M11	Switch	05003891	Phono FM-TV
M12	Ion Trap	21006931	
	Knob	45001873	Controls
	Knob	45001931	Tone (Treble)
	Lever	05004032	Tone (Bass)
	Knob	45001371	Fine Tuning
	Knob	45001551	Tuning



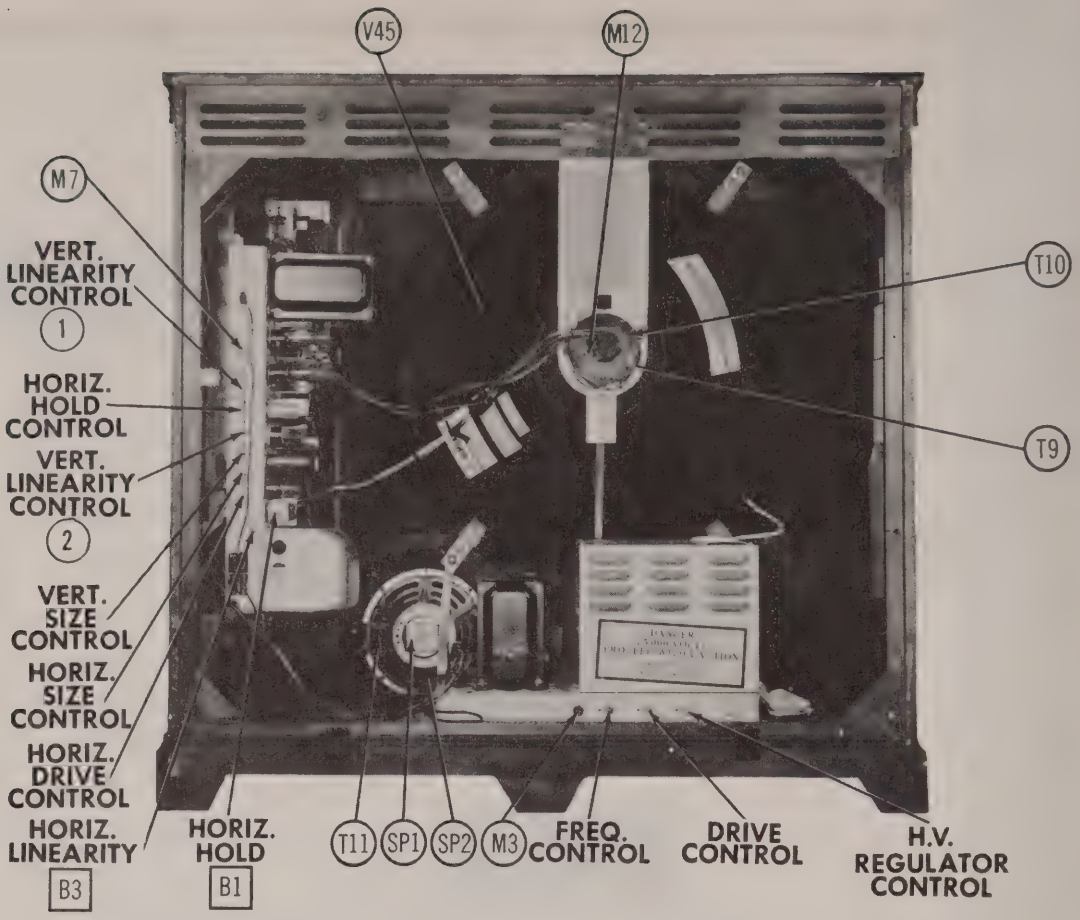
POWER SUPPLY CHASSIS-TOP VIEW



POWER SUPPLY CHASSIS-BOTTOM VIEW


HV OSC V32 6SN7GT
HV PULSE AMP V33 6BG6G
HV PULSE AMP V34 6BG6G
HV CONTROL V35 6W6GT
HV CONTROL AMP V36 6SJ7
HV RECT V38 1B3GT
HV RECT V39 1B3GT
VR 75/OA3 V37
LV RECT V43 5U4G
LV RECT V44 5U4G
RELAY DELAY V42 6AL5
FAILURE PROTECTION CONTROL V41 6SN7GT
FREQ. CONTROL
DRIVE CONTROL
HORIZ. SWEEP PROTECTION RELAY
VERT. SWEEP PROTECTION RELAY
HORIZ FAILURE PROTECTION RECT
VERT FAILURE PROTECTION RECT
H. V REGULATOR CONTROL
HV CONNECTOR
POWER PLUG TO MAIN CHASSIS
DELAY RELAY
-12 VOLT LINE
W18
W19
W20
W21
W22
W23
W24
⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.
▲ MEASURED WITH VTVM
■ MEASURED FROM -12 VOLT LINE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1952
DUMONT MODEL RA-119A

POWER SUPPLY SCHEMATIC



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV Station, preferably a test pattern.

Adjust the horizontal hold slug, (B1), to the mid position between the points where the picture falls into synchronization, not out of synchronization.

Reduce the picture width, and increase the brightness until the normally blanked edges of the raster are visable.

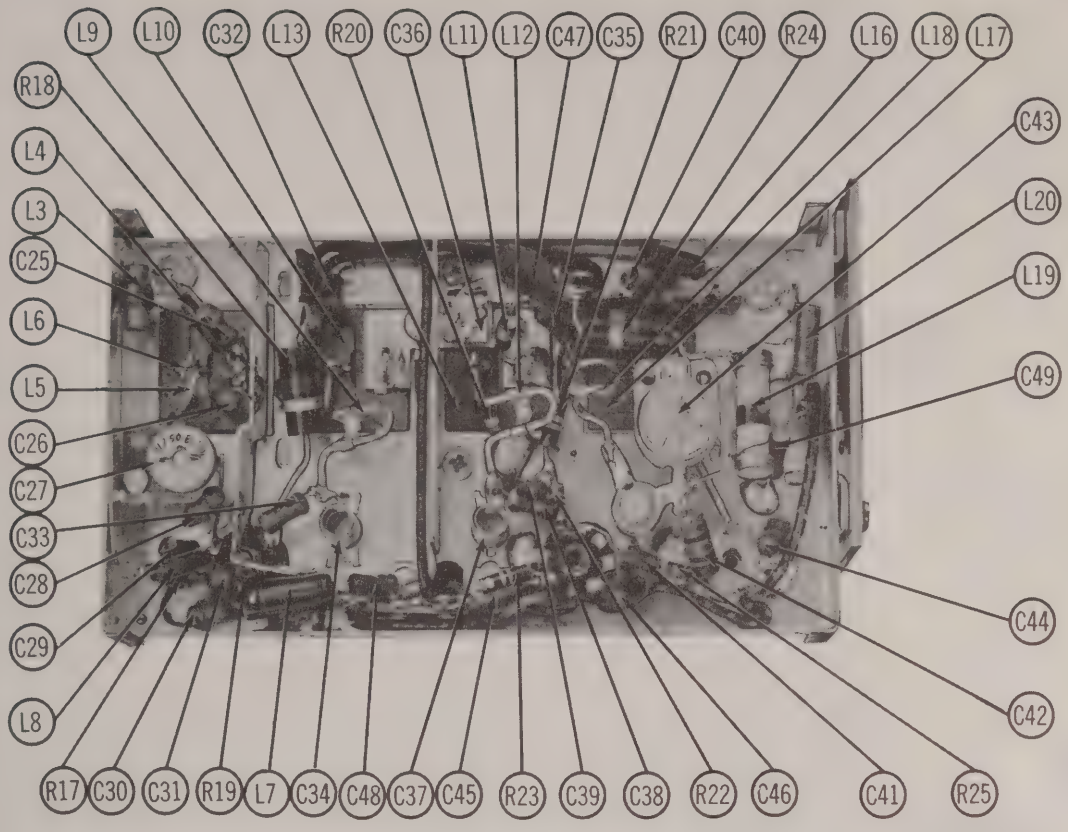
If the normally blanked edges of the raster are not of equal width, adjust the horizontal phase slug, (B2), until the normally blanked border is equal in width on both sides.

Turn the horizontal peaking control clockwise as far as possible without crowding, or vertical bars, appearing in the picture.

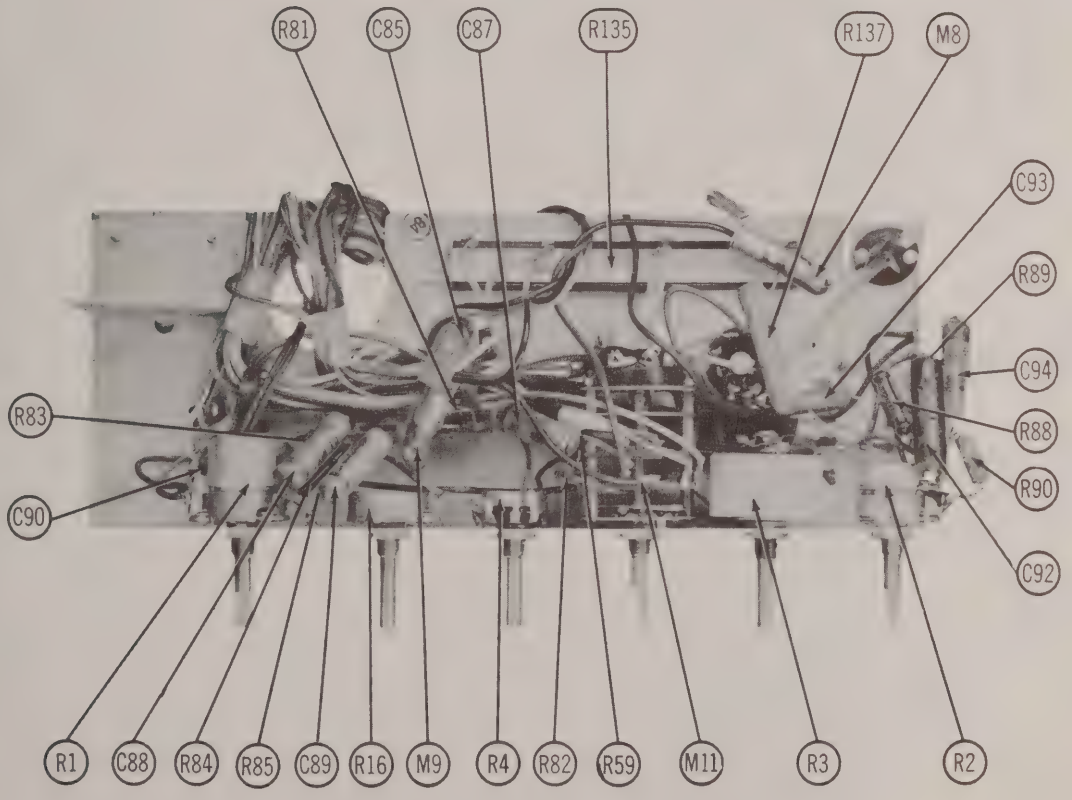
Adjust the horizontal size control until the picture is slightly wider than necessary to fill the mask horizontally. (Note ; Slight pincushioning is normal in these larger picture tube models. (That is, the vertical and horizontal edges of the picture bow slightly inward at the center axis.) The horizontal and vertical size controls should be adjusted so the pincushioning effect falls outside the mask edges where it cannot be seen).

Adjust the horizontal linearity slug, (B3), until the picture is symmetrical from left to right.

Slight readjustment of the peaking control may be necessary to obtain optimum results.



RF TUNER-BOTTOM VIEW



CONTROL PANEL-SIDE VIEW

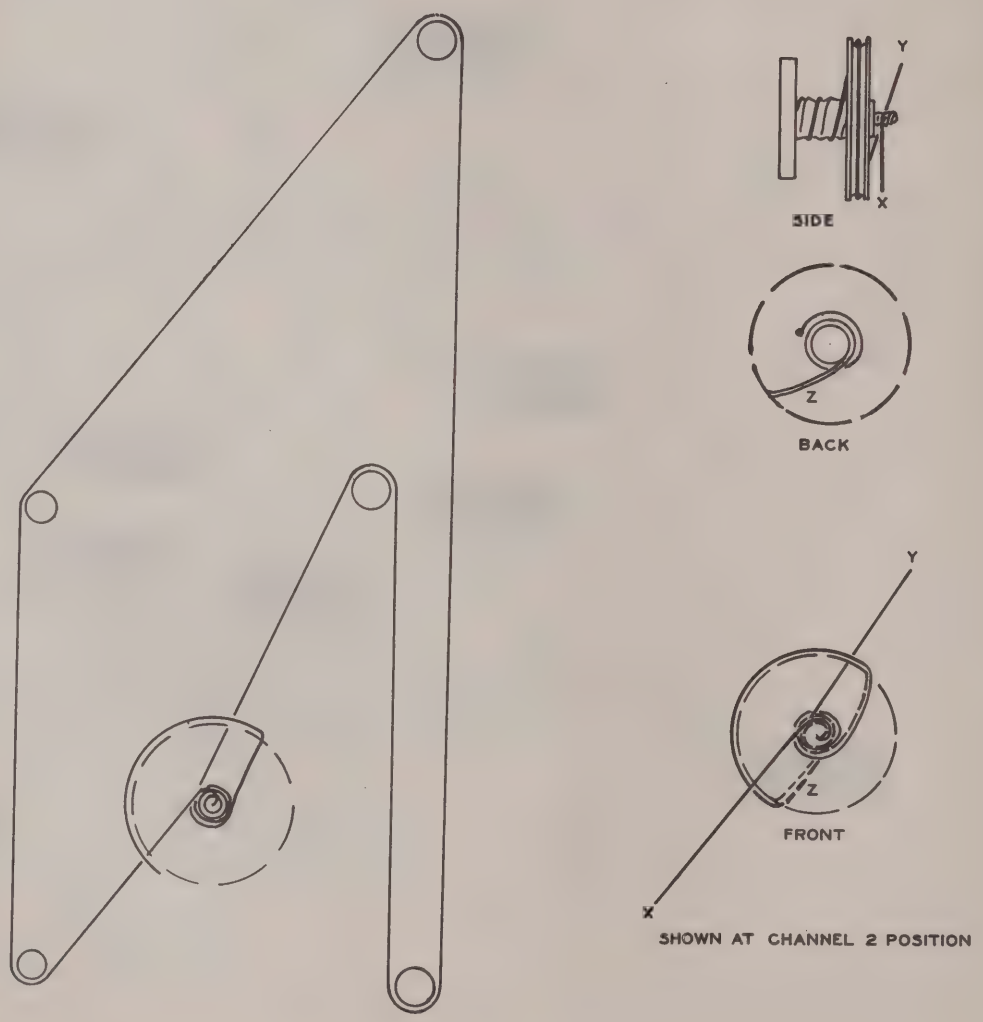
DISASSEMBLY INSTRUCTIONS

1. Remove eight push-on type control knobs, and the tone control pointer.
2. Remove sixteen wood screws from rear cover. Remove rear cover.
3. Disconnect speaker.
4. Disconnect focus coil plug.
5. Disconnect power plug from power supply chassis.
6. Disconnect yoke plug.
7. Remove phillips head screw securing control panel to cabinet.
8. Remove four metal bolts fastening main chassis to cabinet. Remove chassis.
9. Remove four 11/32 hex nuts from speaker. Remove speaker.

Power chassis removal:

1. Disconnect high voltage lead.
2. Disconnect bonding strap from picture tube guard.
3. Remove four 7/16" hex head bolts from power supply chassis. Remove chassis.

Note: For picture tube removal it is necessary to remove the power supply chassis as outlined above.



DIAL CORD STRINGING

PHOTOFACT* Folder

*TRADE MARK

HALLICRAFTERS MODELS 17811-H, 17816, 17817, 17860-H, 17861-H

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

MODEL 17811-H

HALLICRAFTERS MODELS 17811-H, 17816, 17817, 17860-H, 17861-H

HOWARD W. SAMS & CO., INC. • Indianapolis, Indiana

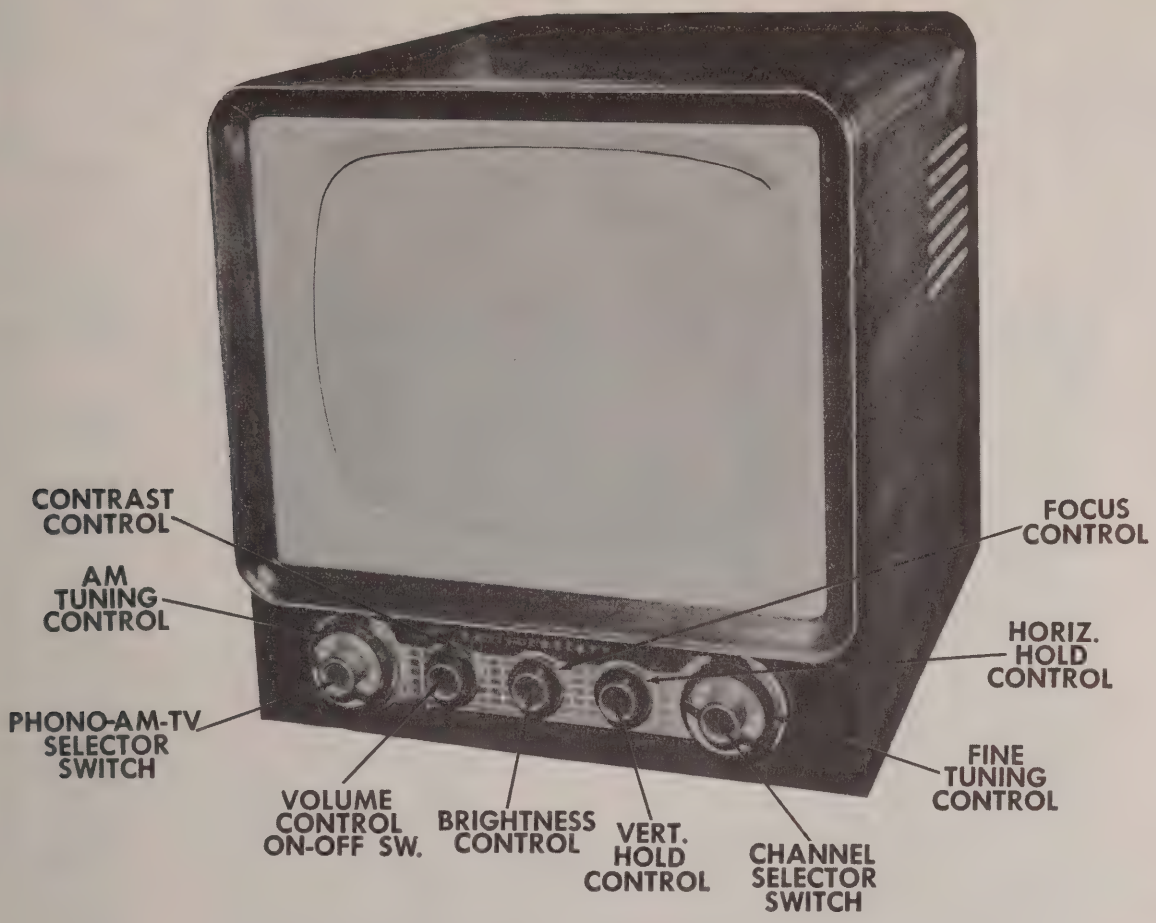
"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1952 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 1-52 SET 156 FOLDER 6

PHOTOFACT* Folder

*TRADE MARK

HALLICRAFTERS MODELS 17811-H, 17816, 17817, 17860-H, 17861-H



HALLICRAFTERS MODELS 17811-H, 17816, 17817, 17860-H, 17861-H

Hallicrafters Model 17811-H

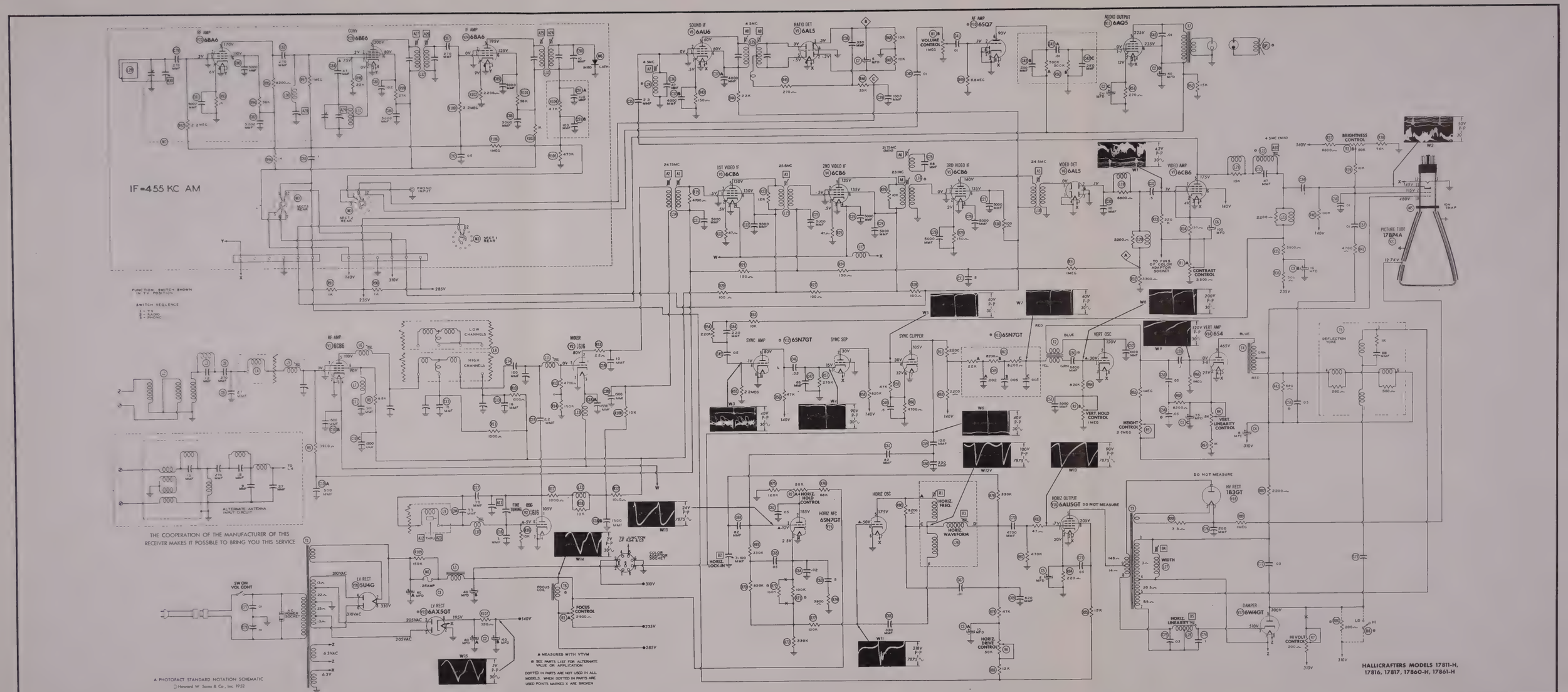
TRADE NAME	Hallicrafters Models 17811-H, 17816, 17817, 17860-H, 17861-H (Ch. Y800D)
MANUFACTURER	Hallicrafters Co., 4401 W. 5th Ave., Chicago (24), Ill.
TYPE SET	TV-AM Receiver (Models 17860-H and 17861-H Have Automatic Record Changer)
TUBES	Twenty-Four
POWER SUPPLY	110-120 Volts AC-60 Cycle
TUNING RANGE	(TV) Channels 2 thru 13 (AM) 535-1620KC
RATING	1.75 Amp. @ 117 Volts AC

INDEX

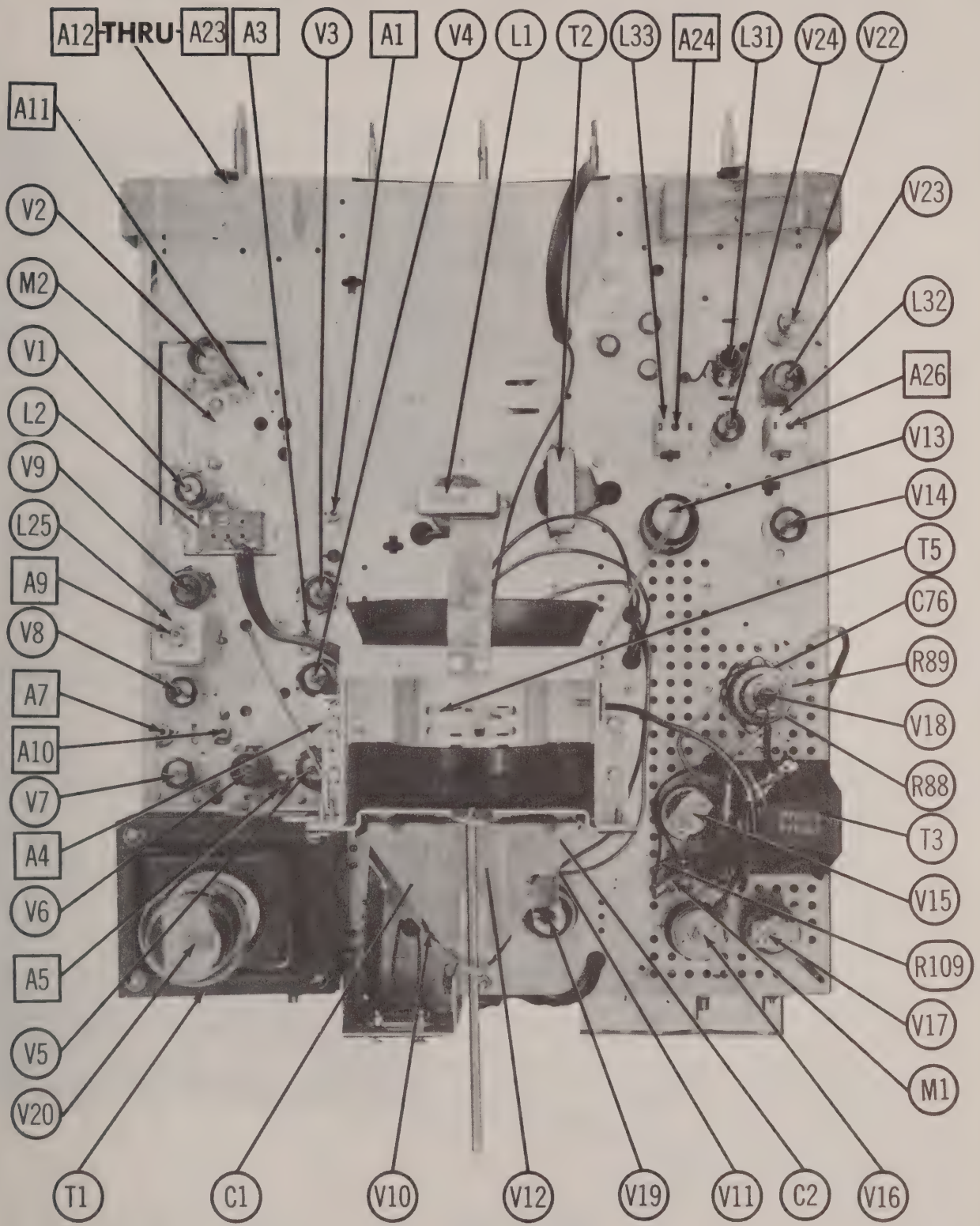
Alignment Instructions 6, 7
Drive Cord Stringing 7
Horizontal Sweep Circuit Adjustments 7
Parts List and Descriptions ..... 11 thru 14
Photographs
Cabinet - Rear View 14
Capacitor and Alignment Identification 4, 9
Chassis - Top View 3
Photographs (cont.)
RF Tuner 10
Resistor and Inductor Identification 15, 16
Resistance Measurements 8
Schematic 2
Schematic Alternate Tuner 8
Tube Placement Charts 5

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

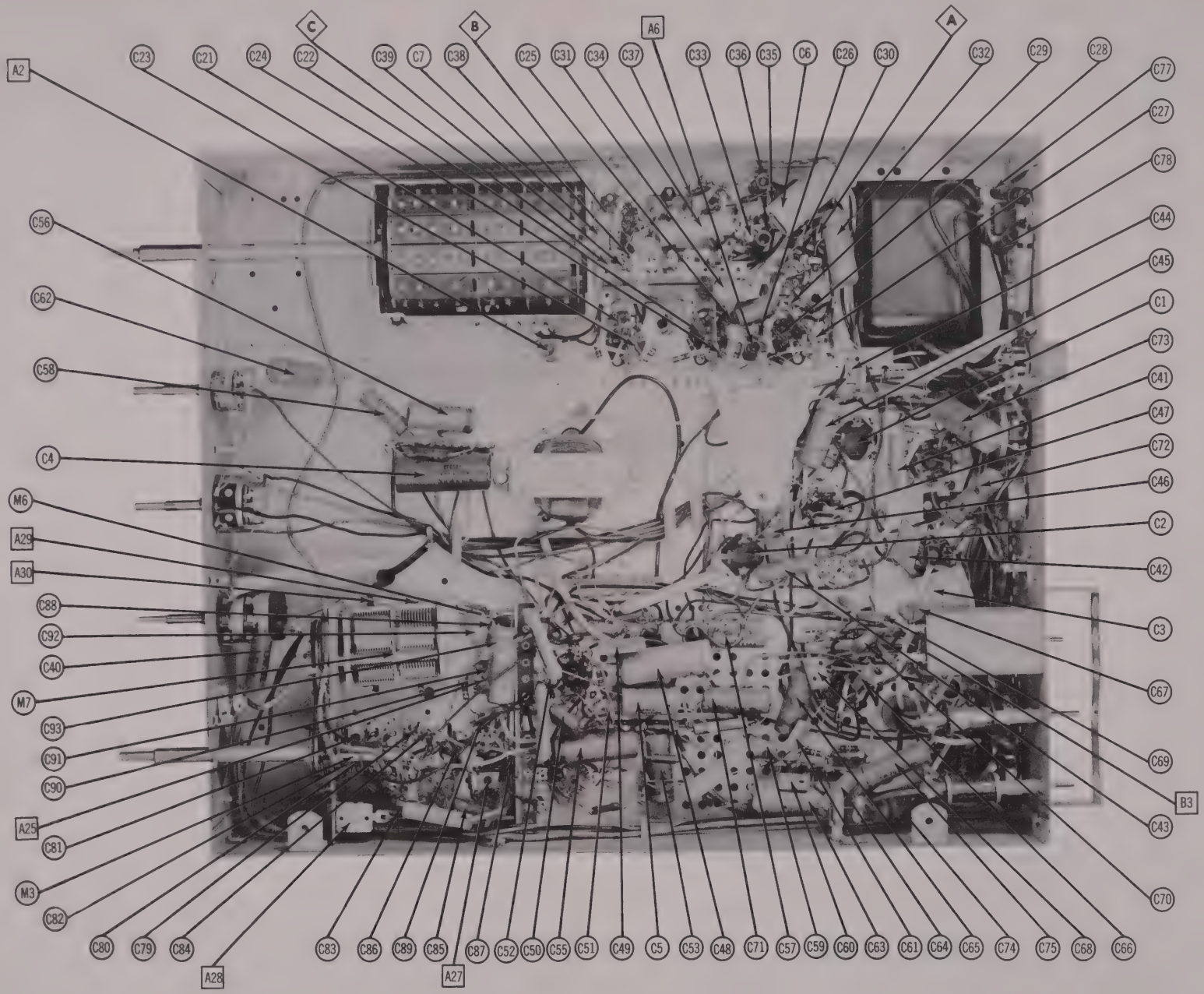
"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1952 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America


IF=4.55 KC AM
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1952
HALLICRAFTERS MODELS 17811-H, 17816, 17817, 17860-H, 17861-H

HALLICRAFTERS MODELS 17811-H, 17816, 17817, 17860-H, 17861-H



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

BOTTOM VIEW

TOP VIEW

TUBE PLACEMENT CHART

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube, (V15), from its socket.
Turn the selector switch to TV, (maximum counter-clockwise).

VIDEO IF ALIGNMENT

These sets employ two types of turret tuners. Tuners No. 1D961, 1A1077, and 1D1088 have printed coils on the turret strips. Tuner No. 1D1055 has wound coils on the inside of the turret strip.
The converter output circuits for these tuners are different, therefore the video IF alignment is different. Determine which tuner is in the set and proceed accordingly.
Remove the converter tube, (V2), and replace it with a 6J6 which has Pin 1 removed, this will disable the local oscillator and prevent the possibility of erroneous indications.

VIDEO IF ALIGNMENT (TUNERS No. 1D961, 1A1077 and 1D1088)

During Step 1 alternate loading of the transformer is required. Connect a 1000Ω Resistor across the primary winding while adjusting the secondary. Move the resistor to across the secondary while adjusting the primary. Remove the Resistor ater Step 1.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	24.75MC (unmod)	Any	DC probe to point (A). Common to chassis.	A1, A2	See instructions above. Adjust for maximum deflection. Alternate signal gen. to maintain 2 volt reading.
2.	"	"	25.6MC	"	"	A3	"
3.	"	"	23.1MC	"	"	A4	"
4.	"	"	24.5MC	"	"	A5	"
5.	"	"	21.75MC	"	"	A6	Adjust for MINUMUM deflection. Repeat step 3.

VIDEO IF ALIGNMENT (TUNER No. 1D1055)

During adjustment of A2, (Step 5), connect a 1000Ω Resistor across R19. Remove the Resistor after adjusting A2.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	25.6MC (unmod)	Any	DC probe to point (A). Common to chassis.	A3	Adjust for max. deflection. Attenuate signal gen. to maintain 2 volt reading.
2.	"	"	23.1MC	"	"	A4	"
3.	"	"	24.5MC	"	"	A5	"
4.	"	"	21.75MC	"	"	A6	Adjust for MINUMUM deflection. Repeat step 2.
5.	"	"	24.5MC	"	"	A1, A2	Adjust for maximum deflection. See instructions above concerning A2.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	24MC (10MC Swp)	21.75MC 26.25MC	Any	Vert. Amp. to point (A). Low side to chassis.		Check for response curve similar to fig. 1. If necessary retouch A1 thru A5 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.005MFD	High side to Pin 1, (Grid) of 6CB6, (V7). Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point (B). Common to chassis.	A7, A8	Adjust for maximum deflection.
8.	"	"	"	"	DC probe to Point (C). Common to chassis.	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450K sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.005MFD	High side to pin 1. (grid) of 6CB6, (V7). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A7, A8	Disconnect stabilizor capacitor C2. Adjust for maximum amplitude and symmetry as per fig. 2.
8.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A9	Reconnect capacitor C2. Adjust A9 so 4.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	.005MFD	High side to pin 1, (grid) of 6CB6, (V7). Low side to chassis.	Not Used	4.5MC (400% mod.)	Any	Vert. Amp. to pin 11 of picture tube. Low side to chassis.	A10	Adjust for MINIMUM 400% indication on scope

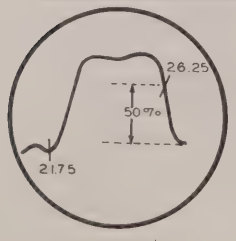


FIG. 1

FIG. 2

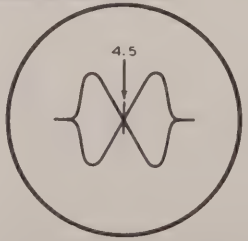


FIG. 3

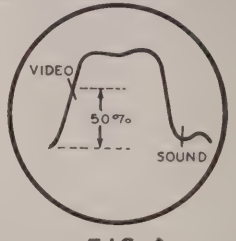


FIG. 4

TV ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT (ALL TUNERS)

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using All. It should be noted that this is an all channel oscillator circuit adjustment and should not be adjusted for any individual channel. If adjustment of All will not bring all channels well within the range of the fine tuning control, it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel strip adjustments are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC swp)	211.25MC 215.75MC	13	Vert. amp. to Point (A). Low side to chassis.	A12	Adjust to place sound marker as shown in Fig. 4. The video marker should be at 50%.
			207MC (10MC swp)	205.25MC 209.75MC	12		A13	
			201MC (10MC swp)	199.25MC 203.75MC	11		A14	
			195MC (10MC swp)	193.25MC 197.75MC	10		A15	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A16	
			183MC (10MC swp)	181.25MC 185.75MC	8		A17	
			177MC (10MC swp)	175.25MC 179.75MC	7		A18	
			85MC (10MC swp)	83.25MC 87.75MC	6		A19	
			79MC (10MC swp)	77.25MC 81.75MC	5		A20	
			69MC (10MC swp)	67.25MC 71.75MC	4		A21	
			63MC (10MC swp)	61.25MC 65.75MC	3		A22	
			57MC (10MC swp)	55.25MC 59.75MC	2		A23	

RADIO ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Turn the selector switch to "Radio" (center position)
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
11.	.01MFD	High side to Pin 7, (Grid), of 6BE6, (V23) Low side to chassis.	455KC (400∿Mod.)	AM	Tuning gang fully open.	Across voice coil.	A24, A25 A26, A27	Adjust for maximum output.
12.	"	High side to stator on front section of tuning gang. Low side to chassis.	"	"	"	"	A28	Adjust for MINIMUM output.
13.		Loop	1600KC	"	1600KC	"	A29, A30	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.
Turn the horizontal hold control to fully clockwise .
Adjust the horizontal range slug, (B1), until the horizontal blanking signal appears in the picture as a single vertical bar.
Turn the hold control t o fully counter clockwise and momentarily interrupt the signal by switching to another channel and back again. There should be three or four sloping bars in the picture. If more than four bars are present turn the horizontal lock trimmer, (B2) slightly clockwise. If less than three bars are present turn B2 slightly counter-clockwise.
Repeat the adjustment of B1 and B2 until three to four bars are present. with the hold control fully counter-clockwise.
Connect the vertical input lead of an oscilloscope thru a 47KΩ resistor to terminal C of L26.
Adjust the horizontal waveform slug, (B3), until the broad and narrow peaks of the waveform on the scope are of equal height as shown in figure 5.
Remove the oscilloscope and recheck the oscillator pull in range. Make any retouching adjustments deemed necessary to obtain the proper conditions described at both ends of the hold control range.
Adjust the horizontal drive control clockwise until a bright vertical line appears in the picture. Then back off the control just enough to remove the white line.
Adjust the width slug, (B4), until the picture is slightly wider than necessary to fill the mask horizontally.
Adjust the horizontal linearity slug, (B5), until the picture is symmetrical from left to right. Slight readjustment of the drive control may be necessary to obtain optimum horizontal linearity.

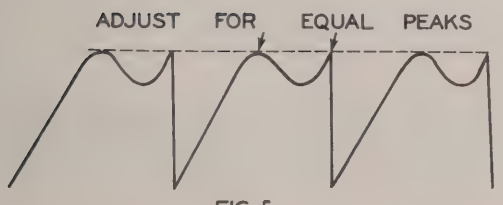
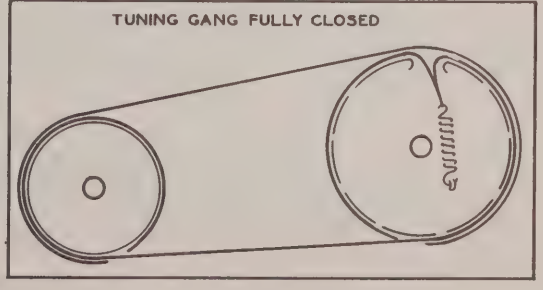


FIG. 5



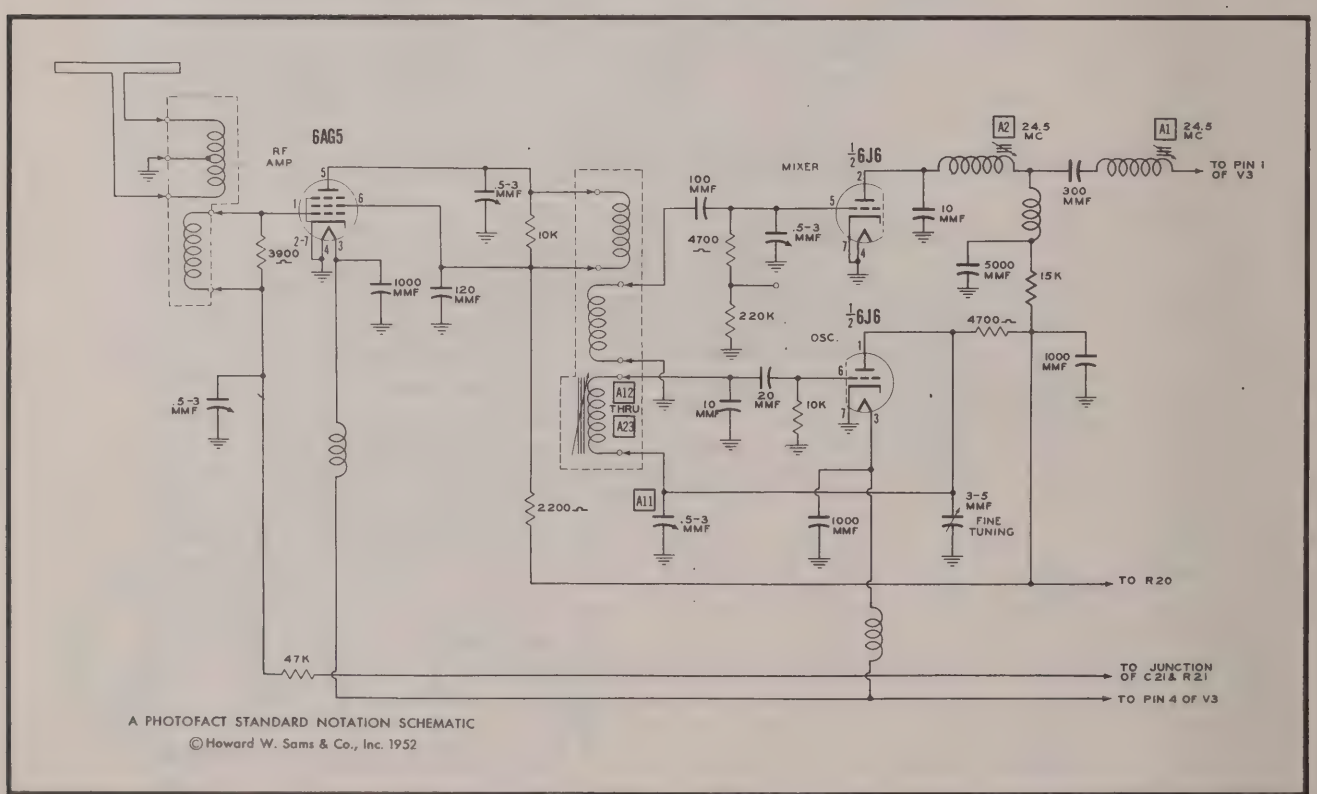
DIAL CORD STRINGING

RESISTANCE MEASUREMENTS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	1Meg	0Ω	0Ω	.1Ω	¶2KΩ	¶7.8KΩ	0Ω		
V 2	6J6	¶3KΩ	¶12KΩ	.1Ω	0Ω	150KΩ	10KΩ	0Ω		
V 3	6CB6	1Meg	47Ω	0Ω	.1Ω	¶950Ω	¶950Ω	0Ω		
V 4	6CB6	1Meg	47Ω	0Ω	.1Ω	¶850Ω	¶850Ω	0Ω		
V 5	6CB6	.2Ω	150Ω	0Ω	.1Ω	¶750Ω	¶850Ω	0Ω		
V 6	6AL5	0Ω	3.3KΩ	.1Ω	0Ω	.3Ω	0Ω	0Ω		
V 7	6CB6	220KΩ	305Ω	0Ω	.1Ω	†8.4KΩ	¶750Ω	305Ω		
V 8	6AU6	1.1Ω	0Ω	0Ω	.1Ω	¶22KΩ	¶22KΩ	150Ω		
V 9	6AL5	10KΩ	10KΩ	.1Ω	0Ω	INF	0Ω	INF		
V 10	6SQ7	0Ω	6.8Meg	0Ω	0Ω	0Ω	†500KΩ	.1Ω	0Ω	
V 11	6AQ5	500KΩ	270Ω	0Ω	.1Ω	†1.4KΩ	†1.4KΩ	500KΩ		
V 12	6SN7GT	0Ω	¶70KΩ	270KΩ	2.2Meg	¶47KΩ	0Ω	.1Ω	0Ω	
V 13	6SN7GT	1.3Meg	#2.4Meg	0Ω	50KΩ	¶5.1KΩ	4.7KΩ	0Ω	.1Ω	
V 14	6S4	INF	2.5KΩ	1Meg	0Ω	.1Ω	1Meg	INF	INF	#3.8KΩ
V 15	6SN7GT	1.4Meg	†61KΩ	412KΩ	480KΩ	†100KΩ	0Ω	.1Ω	0Ω	
V 16	6AU5GT	470KΩ	0Ω	220Ω	INF	#16Ω	INF	.1Ω	†15KΩ	
V 17	6W4GT	INF	INF	250KΩ	INF	†140Ω	INF	#31Ω	#31Ω	
V 18	1B3GT	PINS 1 THR 8 HAVE INF RESISTANCE								TOP CAP #160Ω
V 19	6AX5GT	#32Ω	0Ω	22Ω	INF	23Ω	#32Ω	.1Ω	40KΩ	
V 20	5U4G	INF	16KΩ	INF	35Ω	INF	36Ω	INF	16KΩ	
V 21	17BP4A	0Ω	¶25KΩ	PIN 10 #2.2KΩ	PIN 11 ¶100KΩ	PIN 12 .1Ω				
V 22	6BA6	3.6Meg	0Ω	.1Ω	0Ω	■¶10KΩ	■¶57KΩ	1KΩ		
V 23	6BE6	22KΩ	.6Ω	0Ω	.1Ω	■¶750Ω	■¶27KΩ	2.4Meg		
V 24	6BA6	3.6Meg	0Ω	.1Ω	0Ω	■¶1.7KΩ	■¶57KΩ	2.2KΩ		

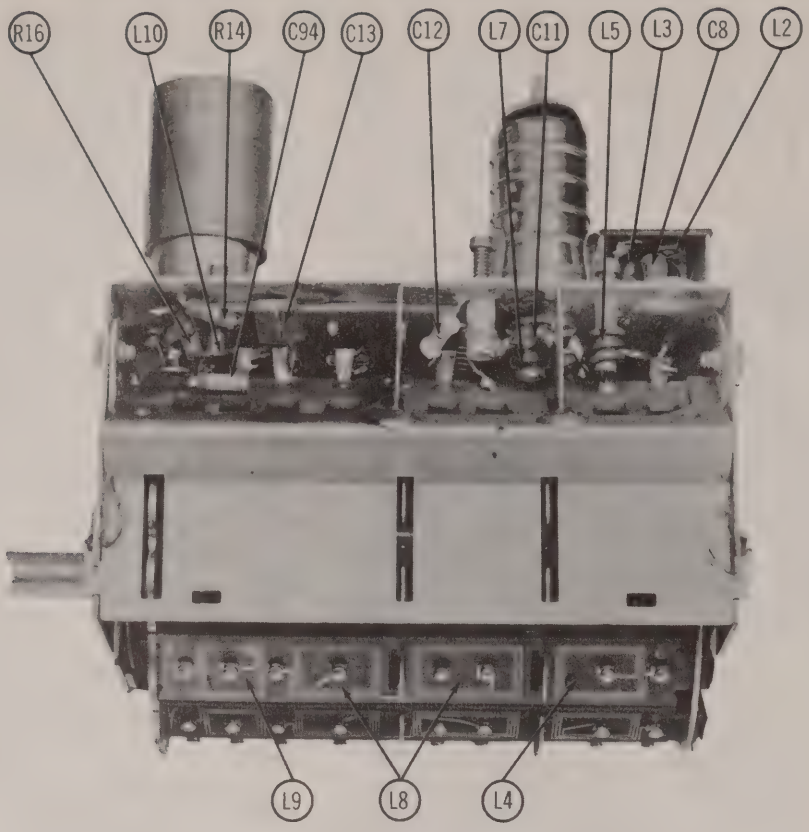
ALL MEASUREMENTS TAKEN IN TV UNLESS NOTED
ALL CONTROLS SET FOR NORMAL OPERATION . NO SIGNAL APPLIED
† MEASURED FROM PIN 8 OF V20
¶ MEASURED FROM PIN 8 OF V19
■ MEASURED IN AM RADIO POSITION
MEASURED FROM PIN 3 OF V17



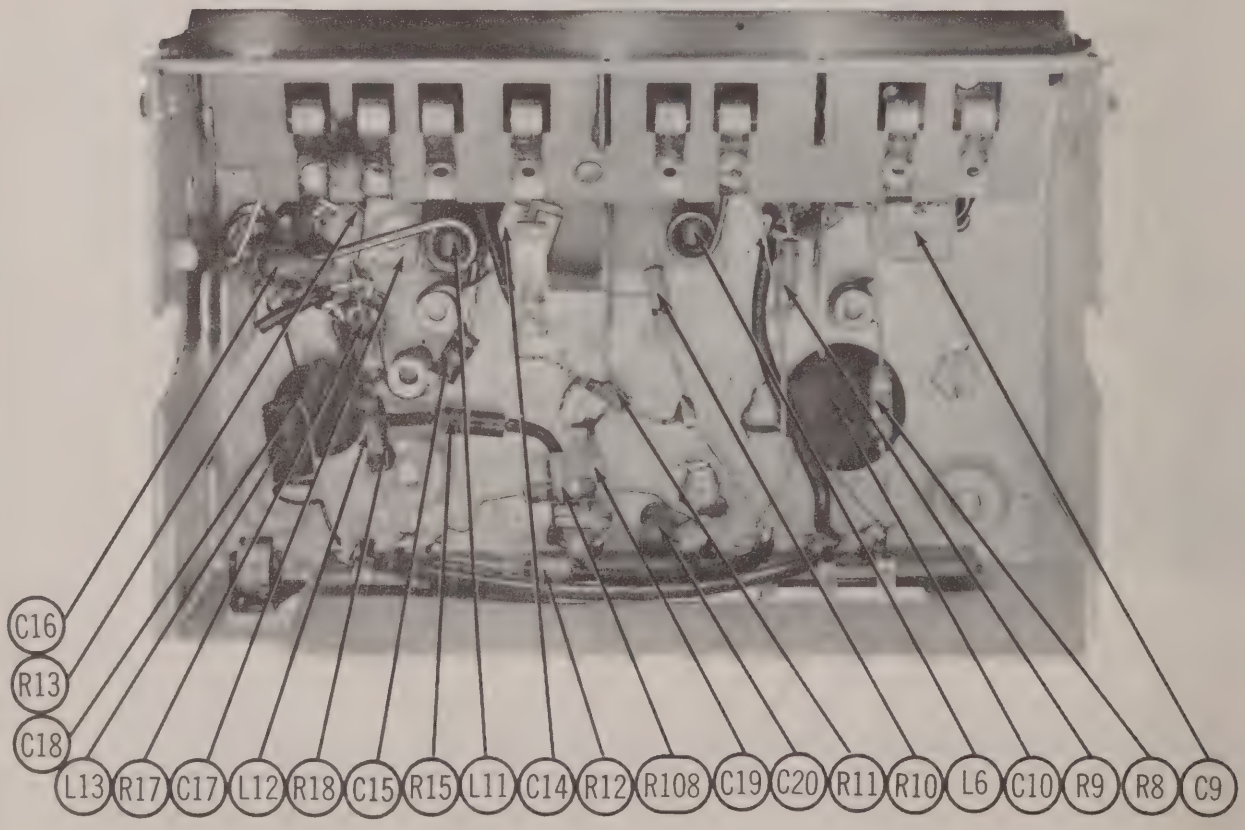
A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1952

ALTERNATE TUNER SCHEMATIC



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		Hallicrafters PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	6CB6	6CB6	7CM	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Det.	6AL5	6AL5	6BT	
V7	Video Amp.	6CB6	6CB6	7CM	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Ratio Det.	6AL5	6AL5	6BT	
V10A	AF Amp.	6SQ7	6SQ7	8Q	
B	AF Amp.	6AV6	6AV6	7BT	
V11	Audio Output	6AQ5	6AQ5	7BZ	
V12A	Sync. Amp-Sync. Sep.	6SN7GT	6SN7GT	8BD	
B	Sync. Amp.-Sync. Sep.	12AU7	12AU7	9A	
V13A	Sync. Clipper-Vert. Osc.	6SN7GT	6SN7GT	8BD	
B	Sync. Clipper-Vert. Osc.	12AU7	12AU7	9A	
V14	Vert. Amp.	6S4	6S4	9AC	
V15	Horiz. AFC-Horiz. Osc.	6SN7GT	6SN7GT	8BD	
V16	Horiz. Output	6AU5	6AU5	6CK	
V17	Damper	6W4GT	6W4GT	4CG	
V18	H.V. Rect.	1B3GT	1B3GT	3C	
V19A	L.V. Rect.	6AX5GT	6AX5GT	6S	
B	L.V. Rect.	6X5	6X5	6S	
V20	L.V. Rect.	5U4G	5U4G	5T	
V22	RF Amp.	6BA6	6BA6	7BK	
V23	Converter	6BE6	6BE6	7CH	
V24	IF Amp.	6BA6	6BA6	7BK	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA			RTMA BASE TYPE	NOTES
	Hallicrafters PART No.	SYLVANIA PART No.	THOMAS PART No.		
V21	17BP4A	17BP4A	17BP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	Hallicrafters PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	60	450	45B173	AFH 2-61		UPT62245		TVL-2770	▲ Filter
B	40	450		PRS50/100		BRH 501		TVA-1310	■ Filter
C	75	50							▲ Vert. Amp. Cathode
C2A	40	250	45B174	AFH 3-44		UP4445C		TVL-4739	■ Filter
B	40	250		PRS25/25		BR4025			▲ Filter
C	20	25							Audio Output Cathode
D	40	450							▲ Audio Output Decoupling
C3A	10	450	45A172	PRS450/10-10		BRD1145A		TVA-2722	Horiz. Osc. Decoupling
B	10	450							Decoupling
C4	8	450	45A103	PRS450/8		BR845A		TVA-1704	Decoupling
C5	5	50	45B175	PRS150/4		BR550		TVA-1303	Horiz. Output Cathode
C6	100	10	45B170	PRS12/100		BRH12IA		TVA-1130	Video Amp. Cathode
C7	5	50	45B175	PRS150/4		BR550		TVA-1303	Stabilizing Cap.
C8	270			SI270	D6-271		GP2K-271	5GA-T27	RF Coupling
C9	27								Fixed Trimmer
C10A	1500			BPD-2X0015	DD-2-152		812-0015	5HK-2D15	AGC Filter
B	1500								RF Amp. Fil.
C	1500			BPD-0015	DD-152		801-0015	5HK-D15	RF Bypass
C11	1500			SI1500	D6-152		GP2L-152	5HK-D15	RF Amp. Screen
C12	18				TCN-18		N750K-180		Fixed Trimmer
C13	16								Fixed Trimmer
C14	100			SI100	D6-101		GP1K-101	5GA-T15	RF Coupling
C15	2.2				TCZ-2.2		NP0K-2R2		Osc. Coupling
C16	13						NP0K-130		Fixed Trimmer
C17	39				TCN-39		N750K-390		Osc. Feedback
C18A	1500			BPD-2X0015	DD-2-152		812-0015	5HK-2D15	Conv. Fil.
B	1500								RF Bypass
C19	10								Fixed Trimmer
C20	1500			SI1500	D6-152		GP2L-152	5HK-D15	Conv. Plate Dec.
C21	5000		47A168	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AGC Filter
C22	5000		47A168	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Video IF Dec.
C23	5000		47A168	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AGC Filter
C24	5000		47A168	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Video IF Dec.
C25	5000		47A168	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Video IF Dec.
C26	68		47B20680K5	SI68	D6-680		GP1K-680	5GA-Q68	Fixed Trimmer
C27	5000		47A168	BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd. Video IF Screen
C28	5000		47A168	BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd. Video IF Cathode
C29	5000		47A168	BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd. Video IF Fil.
C30	10		47B20100K5	SI10	D6-100	5W5Q1	GP1K-100	5GA-Q1	Video Det. Filter
C31	.5	25	46A177	P288-5		GT2P5		2TM-P5	AGC Filter
C32	.5	25	46A177	P288-5		GT2P5		2TM-P5	Video Coupling
C33	47			SI47N750	TCN-47		N750K-470	5TCU-Q47	Fixed Trimmer
C34	.1	200	46AU104J	P288-1	DF-104	PTE4P1		2TM-P1	Video Coupling
C35	2.2		47A160-4		TCZ-2.2		NP0K-2R2		Sound IF Coupling
C36	47			SI47N750	TCN-47		N750K-470	5TCU-Q47	Fixed Trimmer
C37A	4000		47A218	BPD-2X004	D6-402	1D5D4	822-004	5HK-2D4	Sound IF Decoupling
B	4000				D6-402	1D5D4			Sound IF Cathode
C38	330		47B20331K5	SI330	D6-331		GP2K-331	5GA-T33	Diode Load Cap.
C39	1000		47B20A102M5	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	De-emphasis
C40	.01	600	46AY103J	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C41	.01	600	46AY103J	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C42A	.01								Audio Coupling
B	250		†49A017		†PC-80			†101C2	AF Amp. Plate
C									Audio Output Grid

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP	RATING VOLT	REPLACEMENT DATA Hallicrafters PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C43	.01	600	46AY103J	P688-01	D6-103	PTE6S1	GP2 333 103	6TM-S1	Audio Output Plate
C44	220	500	47X20B221K	1468-00025	D6-221	5WST25	GP2K-221	1FM-325	Sync. Coupling
C45	.05	600	46AY503J	P688-05	DF-503	PTE6S5		6TM-S5	Sync. Coupling
C46	.05	600	46AY503J	P688-05	DF-503	PTE6S5		6TM-S5	Sync. Coupling
C47	68		47B20680K5	[illegible]	D6-680	5W5Q47	GP1K-680	5GA-Q68	Sync. Amp. Cathode
C48	5	200	46AT504J	P288-5		GT2P5		2TM-P5	Sync. Clipper Cathode
C49A	.002			P688-002		PTE6D2	GP2-333-202		Vert. Integrator Net.
B	.005		‡49A015	P688-005	‡PC 100	‡PTE6D5	GP2-333-502	‡101C1	Vert. Integrator Net.
C	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Net.
C50	6800	500	47X35B682K					MS-27	Vert. Osc. Grid Cap. †
C51	5000		47A168	BPD-005	DD-502	1D5D5	81I-005	5HK-D5	Vert. Hold Bypass
C52	1000		47B20A102M5	SI1000	D6-102	1WSD1	GP2L-102	5HK-D1	Vert. Osc. Plate
C53	.05	600	46AY503J	P688-05	DF-503	PTE6S5		6TM-S5	Vert. Discharge
C54	.05	600	46AY503J	P688-05	DF-503	PTE6S5		6TM-S5	Vert. Discharge *
C55	.1	600	46AY104J	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C56	.05	600	46AY503J	P688-05	DF-503	PTE6S5		6TM-S5	Fixed Trimmer *
C57	.01	600	46AY103J	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Vert. Sweep Coupling
C58	.01	600	46AY103J	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Integrator Net
C59	120	500	47X20B121K	1468-00015	D6-121	5W5T15	GP2K-121	1FM-315	Horiz. Sync. Coupling
C60	330	500	47X20B331K	1469-00035					Voltage Divider
C61	82	500	47X20B820K	S182			GP1K-820		Horiz. Sync. Coupling
C62	.05	600	46AY503J	P688-05	DF-503	PTE6S5		6TM-S5	AFC Plate
C63	5	200	46AT504J	P288-5		GT2P5		2TM-P5	AFC Filter
C64	.02	600	46AY203J	P688-02	DF-203	PTE6S2		6TM-S2	AFC Filter
C65	.05	600	46AY503J	P688-05	DF-503	PTE6S5		6TM-S5	AFC Filter
C66	330	500	47X20B331K	1469-00035					Horiz. Osc. Grid
C67	.01	400	46BR103E4	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Fixed Trimmer
C68	82	500	47X20B820K						Horiz. Feedback
C69	820	500	47X25B821K						Horiz. Discharge
C70	4700	500	47X35B472K	D5T-P47	D6-472	1D5D5	GP2-333-472	1FM-25	Horiz. Sweep Coupling
C71	.05	600	46AY503J	P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Output Screen
C72	.03	600	46AY303J	P688-03		PTE6S3		6TM-S3	Horiz. Sweep Coupling
C73	.1	600	46AX104J	P688-1	DF-104	PTE6P1		6TM-P1	Horiz. Sweep Coupling
C74	.1	600	46AX104J	P688-1	DF-104	PTE6P1		6TM-P1	Damper Filter
C75	.03	600	46AY303J	P688-03		PTE6S3		6TM-S3	Damper Filter
C76	500	20000	46A223	HV20C	TV3-502				HV Filter
C77	.01	600	46BR103J6	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Line Filter
C78	.01	600	46BR103J6	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Line Filter
C79	270		47B20A271K5	SI270	D6-271	5W5T3	GP2K-271	5GA-T27	RF Coupling
C80	5000		47A168	BPD-005	DD-502	1D5D5	81I-005	5HK-D5	RF Amp. Screen
C81	5000		47A168	BPD-005	DD-502	1D5D5	81I-005	5HK-D5	RF Amp. Cathode
C82	5000		47A168	BPD-005	DD-502	1D5D5	81I-005	5HK-D5	RF Bypass
C83	270		47B20A271K5	SI270	D6-271	5W5T3	GP2K-271	5GA-T27	RF Coupling
C84	47		47B20A470K5	SI47N750	TCN-47		N750K-470	5TCU-Q47	Osc. Grid Cap.
C85	.02	600	46AY203J	P688-02	DF-203	PTE6S2		6TM-S2	Osc. Anode
C86	5000		47A168	BPD-005	DD-502	1D5D5	81I-005	5HK-D5	Conv. Plate Dec.
C87	270		47B20A271K5	SI270	D6-271	5W5T3	GP2K-271	5GA-T27	IF Coupling
C88	5000		47A168	BPD-005	DD-502	1D5D5	81I-005	5HK-D5	1F Amp. Plate Dec.
C89	5000		47A168	BPD-005	DD-502	1D5D5	81I-005	5HK-D5	1F Amp. Screen Bypass
C90	10		47B20A100K5	SI10	D6-100	5W5Q1	GP1K-100	5GA-Q1	Fixed Trimmer
C91A	100		¶ 49A016	SI100	¶ PC-50	(5W5T1	GP1K-101	¶ 100C1	Det. RF Filter
B	100			SI100		(5W5T1	GP1k-101		Det. RF Filter
C92	.05	200	46AU503J	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C93	.1	600	46AY104J	P688-1	DF-104	PTE6P1		6TM-P1	AVC Filter
C94	3.3			SI3.3NP0	TCZ-3.3		NP0K-3R3		Fixed Trimmer

* Not used in all Models
‡ Some Models use 4700MMF in this application
• Items C49A, C49B, C49C, R63A, R63B, R63C are combined in one unit
† Items C42A, C42B, C43C, R50A, R50B are combined in one unit
When replacing items separately C42B and C42C should total 250MMF
¶ Items C91A, C91B, R104 are combined in one unit

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Hallicrafters PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	2500Ω		25B898		RTV-234	SBB-614-S	Contrast Control - Panel
B	1Meg			Concentrikit*			Volume Control & Switch - Rear
R2A	1Meg			Bil-137 *			Vertical Hold Control - Panel
B	50KΩ		25B917 §	Bil-123 *	RTV-40		Horizontal Hold Control - Rear
C	Shaft end			E187 *			Attach per instructions in "Concentrikit"
R3A	2500Ω		25B895		RTV-235		Focus Control - Panel
	50KΩ						Brightness Control - Rear
R4A	5000Ω		25B712	Q11-114	AM-19-S	AN-10	Vertical Linearity Control
B	Shaft			Not Req.	FKS-1/4	AK-1	Attach to R4A per instructions
R5A	2.5Meg		25B711	Q11-239	AG-84-S	AN-83	Height Control
B	Shaft			Not Req.	FKS-1/4	AK-1	Attach to R5A per instructions
R6A	50KΩ		25A858	Q11-123	AG-44-S	AN-31	Horizontal Drive Control
B	Shaft			Not Req.	FSK-1/4	AK-1	Attach to R6A per instructions
R7	200Ω	2	25B714	W-200	43-200	VK-123	High Voltage Control - Wire Wound ♦

* Additional parts to be used with "Concentrikit"
§ Some Models may use 25B916
♦ Not Used in all Models

RESISTORS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Hallicrafters PART No.	IRC PART No.	IDENTIFICATION CODES All resistors ±10% unless otherwise specified.
R8	3900Ω		23X20X392K	BTS-3900	RF Amplifier Grid
R9	6800Ω		23X20X682K	BTS-6800	RF Amplifier Screen
R10	1000Ω		23X20X102M	BTS-1000	RF Amplifier Plate
R11	1000Ω 5%		23X20X102M	BTS-1000 5%	RF Amplifier Plate
R12	1000Ω		23X20X102M	BTS-1000	Decoupling
R13	4700Ω		23X20X472M	BTS-4700	Mixer Grid
R14	150KΩ		23X20X154K	BTS-150K	Mixer Grid
R15	22Ω 5%				Parasitic Suppresser
R16	10KΩ		23X20X103K	BTS-10K	Oscillator Grid
R17	1000Ω		23X20X102M	BTS-1000	Oscillator Plate
R18	10KΩ		23X20X103K	BTS-10K	Coil Shunt

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Hallicrafters PART No.	IRC PART No.	IDENTIFICATION CODES
R19	4700Ω		23X20X472K	BTS-4700	1st Video IF Coil Shunt
R20	100Ω		23X20X101K	BTS-100	Decoupling
R21	150Ω		23X20X151K	BTS-150	AGC Network
R22	47Ω		23X20X470M		1st Video IF Cathode
R23	12KΩ		23X20X123K	BTS-12K	2nd Video IF Coil Shunt
R24	150Ω		23X20X151K	BTS-150	AGC Network
R25	47Ω		23X20X470M		2nd Video IF Amplifier Cathode
R26	10KΩ		23X20X103K	BTS-10K	3rd Video IF Coil Shunt
R27	100Ω		23X20X101K	BTS-100	Decoupling
R28	100Ω		23X20X101K	BTS-100	Decoupling
R29	150Ω		23X20X151K	BTS-150	3rd Video IF Amplifier Cathode
R30	100Ω		23X20X101K	BTS-100	3rd Video IF Decoupling
R31	1Meg		23X20X105M	BTS-1Meg	AGC Network
R32	3300Ω		23X20X332K	BTS-3300	Video Detector Diode Load
R33	220KΩ		23X20X224M	BTS-220K	Video Amplifier Grid
R34	150Ω		23X20X151K	BTS-150	Video Amplifier Cathode
R35	5600Ω		23X40X562K	BTS-5600	Video Amplifier Plate
R36	1500Ω	1	23X30X152K	BTA-1500	Video Amplifier Plate Decoupling
R37	6800Ω		23X20X682K	BTS-6800	Voltage Divider
R38	56KΩ		23X20X563K	BTS-56K	Voltage Divider
R39	10KΩ		23X20X103K	BTS-10K	Picture Tube Grid
R40	100KΩ 5%		23X20X104M	BTS-100K 5%	Picture Tube Cathode
R41	4700Ω		23X20X472K	BTS-4700	Integrator Network
R42	680Ω 5%	1	23X20X681M	BTA-680 5%	Integrator Network
R43	150Ω		23X20X151K	BTS-150	Sound IF Amplifier Cathode
R44	22KΩ		23X20X223K	BTS-22K	Sound IF Amplifier Decoupling
R45	270Ω		23X20X271K	BTS-270	Balancing
R46	33KΩ		23X20X333K	BTS-33K	De-emphasis
R47	10KΩ 5%		23X20X103J	BTS-10K 5%	Ratio Detector Diode Load
R48	10KΩ 5%		23X20X103J	BTS-10K 5%	Ratio Detector Diode Load
R49	6.8Meg			BTS-6.8Meg	AF Amplifier Grid
R50A	500KΩ		‡49A017	BTS-470K	AF Amplifier Plate
B	500K			BTS-470K	Output Grid
R51	270Ω	1	23X3027IK	BTA-270	Output Cathode
R52	15KΩ	10	24A922	1 3/4A-15K	Bleeder- Wire Wound
R53	10KΩ		23X20X103K	BTS-10K	Isolation
R54	220KΩ		23X20X224M	BTS-220K	Isolation
R55	2.2Meg		23X20X225M	BTS-2.2Meg	Sync. Amplifier Grid
R56	47000Ω		23X20X 473K	BTS-47K	Sync. Amplifier Plate
R57	270KΩ		23X20X274M	BTS-270K	Sync. Separator Cathode
R58	820KΩ		23X20X824M	BTS-820K	Sync. Separator Plate
R59	47KΩ		23X20X473K	BTS-47K	SYnc. Clipper Grid
R60	4700Ω		23X20X472K	BTS-4700	Sync. Clipper Cathode
R61	2200Ω		23X20X222K	BTS-2200	Sync Clipper Plate
R62	2200Ω	1	23X30X222K	BTA-2200	Sync. Clipper Plate
R63A	22KΩ			BTS-22K	Integrator Network
B	8200		♦49A015	BTS-8200	Integrator Network
C	8200			BTS-8200	Integrator Network
R64	820KΩ		23X20X824K	BTS-820K	Vertical Oscillator Grid
R65	1Meg 20%	1	23X30X105M	BTA-1Meg	Vertical Oscillator Plate
R66	1Meg 20%		23X20X105M	BTS-1Meg	Vertical Amplifier Grid
R67	1000Ω	1	23X30X102M	BTA-1000	Vertical Amplifier Cathode
R68	8200Ω		23X20X822K	BTS-8200	Integrator Network
R69	330KΩ		23X20X334K	BTS-330K	Horizontal AFC Grid
R70	820KΩ		23X20X824K	BTS-820K	Horizontal AFC Grid
R71	100KΩ	1	23X30X104M	BTA-100K	Horizontal AFC Cathode See Note 1.
R72	150KΩ	1	23X30X154K	BTA-150K	Horizontal AFC Cathode See Note 2
R73	330KΩ		23X20X334K	BTS-330K	Horizontal AFC Cathode
R74	3900Ω		23X20X392K	BTS-3900	AFC Filter
R75	120KΩ	1	23X30BF124K	BTA-120K	Voltage Divider
R76	68KΩ		23X20X683K	BTS-68K	Horizontal AFC Plate
R77	150KΩ		23X20X154K	BTS-150K	Horizontal Oscillator Grid
R78	47KΩ	1	23X30SF473K	BTA-47K	Horizontal Oscillator Plate
R79	330KΩ		23X30X334K	BTS-330K	Feedback
R80	8200Ω		23X20X822K	BTS-8200	Horizontal Oscillator Transformer Shunt
R81	12KΩ		23X20X123K	BTS-12K	Horizontal Oscillator Plate Decoupling
R82	470KΩ		23X20X474M	BTS-470K	Horizontal Output Grid
R83	47Ω		23X20X470M		Parasitic Suppressor
R84	220Ω	3	24A925	1 3/4- 225	Horizontal Output Cathode Wire Wound
R85	15KΩ	2	23X40X153K	BTB-15K	Horizontal Output Screen
R86	200Ω			BTS-220	Damper Plate See Note 3.
R87	2200Ω	1	23X30X222K	BTA-2200	Decoupling
R88	3.3Ω		23X20X033K		High Voltage Rectifier Filiment
R89	1Meg	1	23X30X105M	BTA-1Meg	High Voltage Rectifier Filter
R90	1000Ω	5	24A921	1 3/4A-1000	Focus Coil Shunt- Wire Wound
R91	1000Ω	5	24A921	1 3/4A-1000	Decoupling Wire Wound
R92	2.2Meg		23X20X225M	BTS-2.2Meg	RF Amplifier Grid
R93	1000Ω		23X20X102M	BTS-1000	RF Amplifier Cathode
R94	56KΩ		23X20X563K	BTS-56K	RF Amplifier Screen
R95	8200Ω 20%		23X20X681M	BTS-8200	RF Amplifier Plate
R96	1000Ω		23X20X102M	BTS-1000	RF Amplifier Decoupling
R97	1Meg		23X20X105M	BTS-1Meg	Mixer Grid
R98	22KΩ 20%		23X20X223K	BTS-22K	Oscillator Grid
R99	27KΩ	1	23X30X273M	BTA-27K	Converter Screen
R100	2.2Meg		23X20X225M	BTS-2.2Meg	1st AM IF Amplifier Grid
R101	56KΩ		23X20X563K	BTS-56K	1st AM IF Amplifier Screen
R102	2200Ω		23X20X222M	BTS-2200	1st AM IF Amplifier Cathode
R103	1000Ω		23X20X102M	BTS-1000	Decoupling
R104	47KΩ		¶49A016	BTS-47K	Diode Filter
R105	470KΩ 20%		23X20X474M	BTS-470K	Diode Load
R106	1Meg 20%		23X20X105M	BTS-1Meg	AVC Network
R107	750Ω	10	24A922	1 3/4A-750	Filter
R108	10KΩ 5%		23X20X103J	BTS-10K 5%	Mixer Plate Decoupling
R109	150KΩ		23X20X154K	BTS-150K	Fuse Shunt

Note 1: Some models use an 82KΩ resistor in place of R71 and R72.
Note 2: Not used in all models.
Note 3: Some models use a High Voltage Control in this application.

• Items R63A, R63B, R63C, C49A, C49B and C49C are combined in one unit.
† Items R50A, R50B, C42A, C42B and C42C are combined in one unit.
¶ Items R104, C91A and C91B are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA Hallicrafters PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 1.75A	620VCT .190ADC 400VCT .080ADC	5VAC @ 3.0A	6.3VAC @ 8.7A SEC 4 6.3VAC @ 1.2A	52C204		P-3073	

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA Hallicrafters PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	190Ω	1400Ω	55C115	A-8111	A-3000		Vert. Blocking Osc.
T3	162Ω Tapped @ 14Ω	32Ω Tapped @ 8.5Ω & 29Ω SEC. 2 0Ω	55C149				Horizontal Output
T4	1600Ω Tapped @ Plate		55B151		A-3039		Vertical Output
T5A	18Ω		53C197	DY-9	MDF-70		Horiz. Deflection Coils
B	45Ω						Vert. Deflection Coils
T6A	800Ω		51B1246				Focus Coil
B			51-1372				Alternate Focus Coil

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA Hallicrafters PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	4.1KΩ	2.9Ω	280Ω	.5Ω	55B150	A-3877	A-2930	RO-9	

SPEAKER

ITEM No.	RATINGS FIELD. RES.	RATINGS V. C. IMP.	REPLACEMENT DATA Hallicrafters PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1A	PM	2.9Ω	85C103	ST-105 Mod. P5-X	5A1	Used in Models 17811-H, 17816, &17817
B	PM	3.6Ω	85D107		12A4A	Used in Models 17860-H, & 17861-H
	CONE DIA.	V. C. DIA.				
SP2A	4 3/4"	9/16"				
B	11½"	•1"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA Hallicrafters PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.190A	85Ω	1.3H	56C116	C-1411①	C-2994①	TR-3300①	① Drill One New Mounting Hole

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA Hallicrafters PART No.	MERIT PART No.	NOTES
L2A	Ant.	.1Ω				
B	Matching	.1Ω				
C	Trans.	.2Ω				
L3	IF Trap	.6Ω				Wound on 12MMF Cap.
L4	Ant. Coils					Channel 2 thru 13
L5	Ant. Coil	0Ω				
L6	RF Coil	.1Ω				
L7	RF Choke	0Ω				
L8	RF, Mixer Grid Coils					Channels 2 thru 13 Channel 2 thru 13
L9	Osc. Coils					
L10	Osc. Coil	0Ω				
L11	Mixer Grid	0Ω				
L12	RF Choke	.6Ω				Wound on 10K Resistor
L13	Fil. Choke	0Ω				
L14	1st. Video IF	.1Ω	.2Ω	51B1334		
L15	2nd. Video IF	.2Ω	.2Ω	50A475		
L16A	3rd. Video IF	.2Ω	.2Ω	51B1332		Includes Trap
B	3rd. Video IF			50A476		Alternate
L17	Fil. Choke	0Ω		52A200		
L18	4th. Video IF	.3Ω	.3Ω	50A477		
L19	Peaking Coil	8.2Ω		51A1256		Wound on 6.8K Resistor
L20	Peaking Coil	1Ω		51A1260		Wound on 2.2K Resistor
L21	Peaking Coil	1Ω		51A1257		Wound on 15K Resistor
L22A	4.5MC Trap	1.3Ω		51B1333		
B	4.5MC Trap			50B474		Alternate
L23	Peaking Coil	17Ω		51A1259		Wound on 2.2K Resistor
L24A	Sound IF	1.2Ω		51B1333		
B	Sound IF			50B474		Alternate
L25	Ratio Det. Trans.	.4Ω	.7Ω	50C472		Tap at .8Ω
L26	Horiz. Osc.	72Ω	44Ω	51B1242		
L27	Width Coil	24Ω		51B1330	MWC-1	
L28	Horiz. Lin.	5.5Ω		51B1331		Tap at 1.5Ω
L29	AM Loop Ant.	1.4Ω		57C146		
L30	455KC Trap	53Ω		53B198		
L31	AM Osc. Coil	6.3Ω		51B1245		Tap at .6Ω
L32	Input IF	15.5Ω	15Ω	50B472		
L33	Output IF	15.5Ω	15Ω	50B472		

HALLICRAFTERS MODELS 17811-H, 17816, 17817, 17860-H, 17861-H

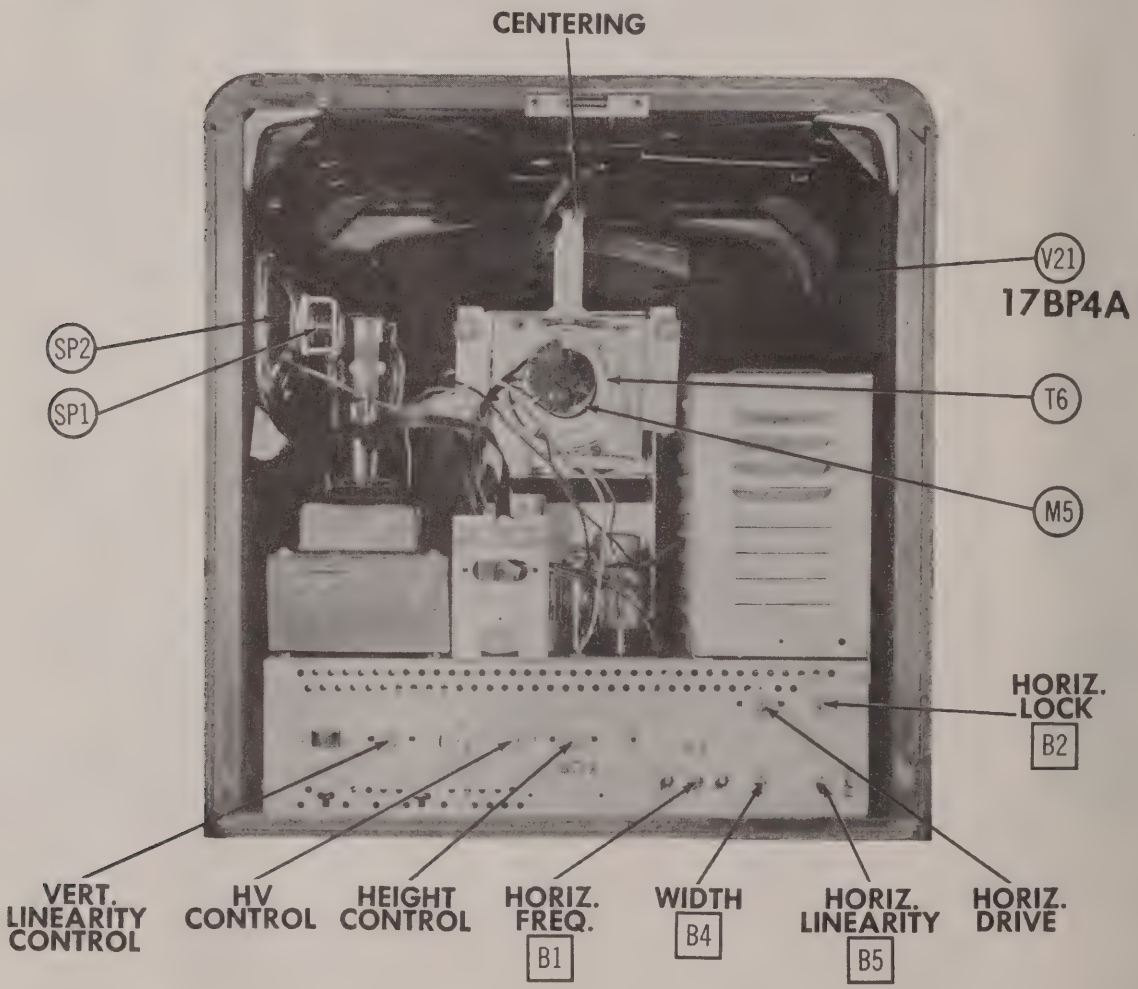
PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

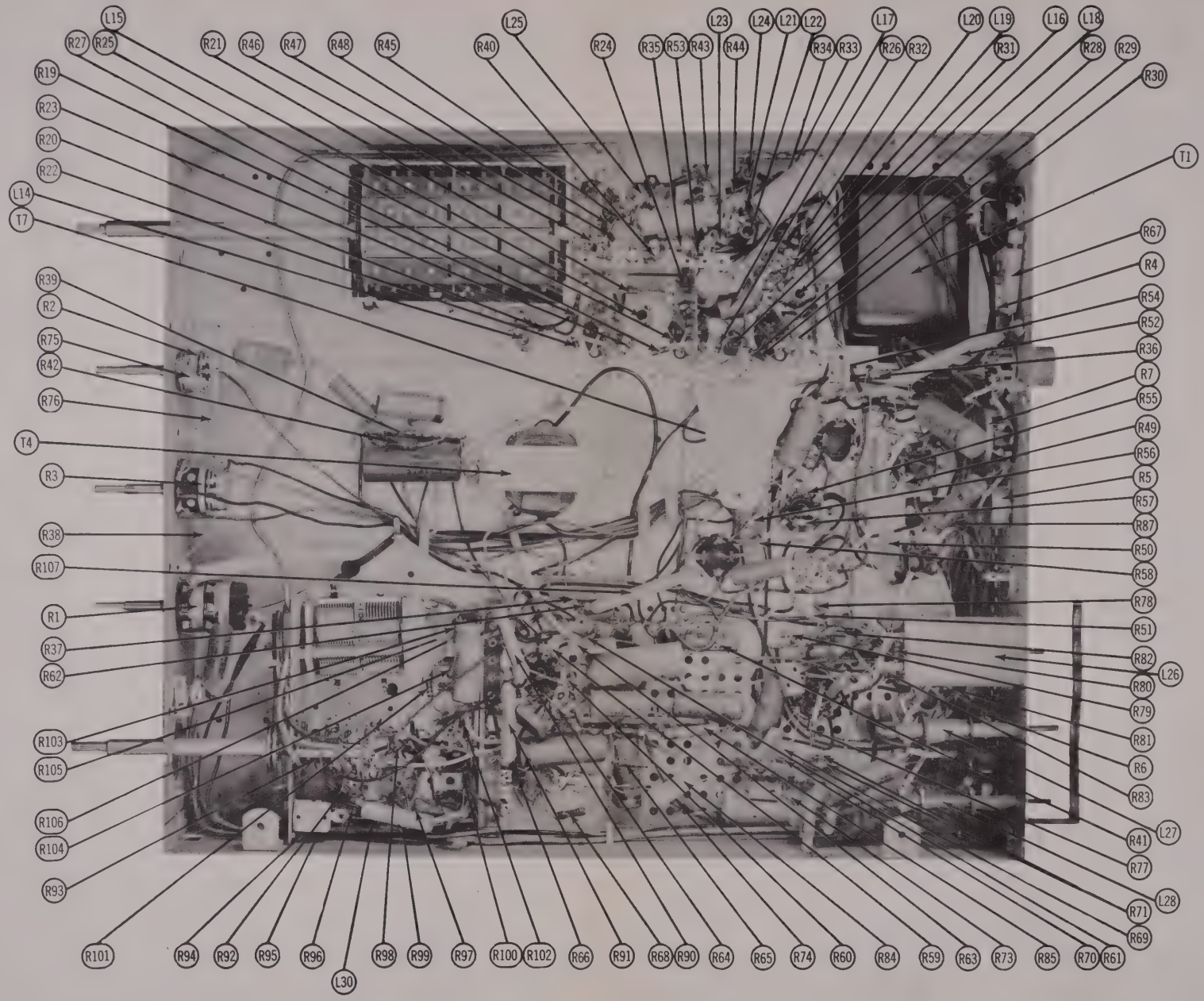
ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			Hallicrafters PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG Slo-Blo	1/4A	39A344		318.250		

MISCELLANEOUS

ITEM No.	PART NAME	Hallicrafters PART No.	NOTES
M2A	RF Tuner	1D961	
B	RF Tuner	1D1055	Alternate
C	RF Tuner	1D1077	Alternate
D	RF Tuner	1D1088	Alternate
M3A	Switch	60B426	3 Section
B	Switch	60B427	2 Section
M4	Switch	60A249	Hi-Lo Line (Not used in all Models)
M5	Ion Trap	21A101	
M6	Crystal		1N60
M7	Tuning Cap	48B241C	20-463MMF -31-188MMF
B2	Trimmer	44A391	Horiz. Lock (7-100MMF)
	Knob	15D271	AM Tuning } Mahogany
	Knob	15D293	Channel Selector
	Knob	15B269	Contrast, Focus & Horiz. Hold
	Knob	15A299	Fine Tuning
	Knob	15B234	Off/On Volume, Brightness, & Vert. Hold
	Knob	15C375	TV-AM-Phono Switch
	Knob	15A279	AM Tuning } Beige
	Knob	15D294	Channel Selector
	Knob	15B276	Contrast, Focus & Horiz. Hold
	Knob	15A300	Fine Tuning
	Knob	15B243	Off/On Volume, Brightness & Vert. Hold
	Knob	15C376	T.V.-AM-Phono Switch



CABINET-REAR VIEW



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

JACKSON
MODEL DP-51

JACKSON
MODEL DP-51

TRADE NAME	Jackson Model DP-51
MANUFACTURER	Jackson Industries, Inc., 58 E. Cullerton St., Chicago, Ill.
TYPE SET	AC Operated Radio-Phonograph Combination Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Power Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC — RATING .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD.	High side to stator on rear section of tuning gang. Low side to B-.	455KC (400~Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620KC	"	Across voice coil.	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune for max. output.	"	A6	"

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1952 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		JACKSON PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp.	12AT7	12AT7	9A	
V4	Power Output	50C5	50C5	7CV	
V5	Rect.	35W4GT	35W4GT	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	JACKSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	150		PRS150/40-40		EDL4415		TVA-2445	Filter
B	40	150							Filter
C2	15			S115	D6-150		GP1K-150	5GA-Q15	Fixed Trimmer
C3	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	AVC Filter
C4	.006	600		P688-006		PTE6D6	GP2-333-602	6TM-D6	Audio Coupling
C5A	.005				♦ PC-70				Audio Coupling
B	250								AF Amp. Plate
C									Power Output Grid
C6	.02	600		P688-02	DF-203	PTE6S2		6TM-S2	Power Output Plate
C7	.02	600		P688-02	DF-203	PTE6S2		6TM-S2	Line Filter
C8	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Line Isolation

♦ Items C5A, B, C and R6A, B are combined in one unit. When replacing Items C5B & C the combined valve should equal 250 MMF.

CONTROLS

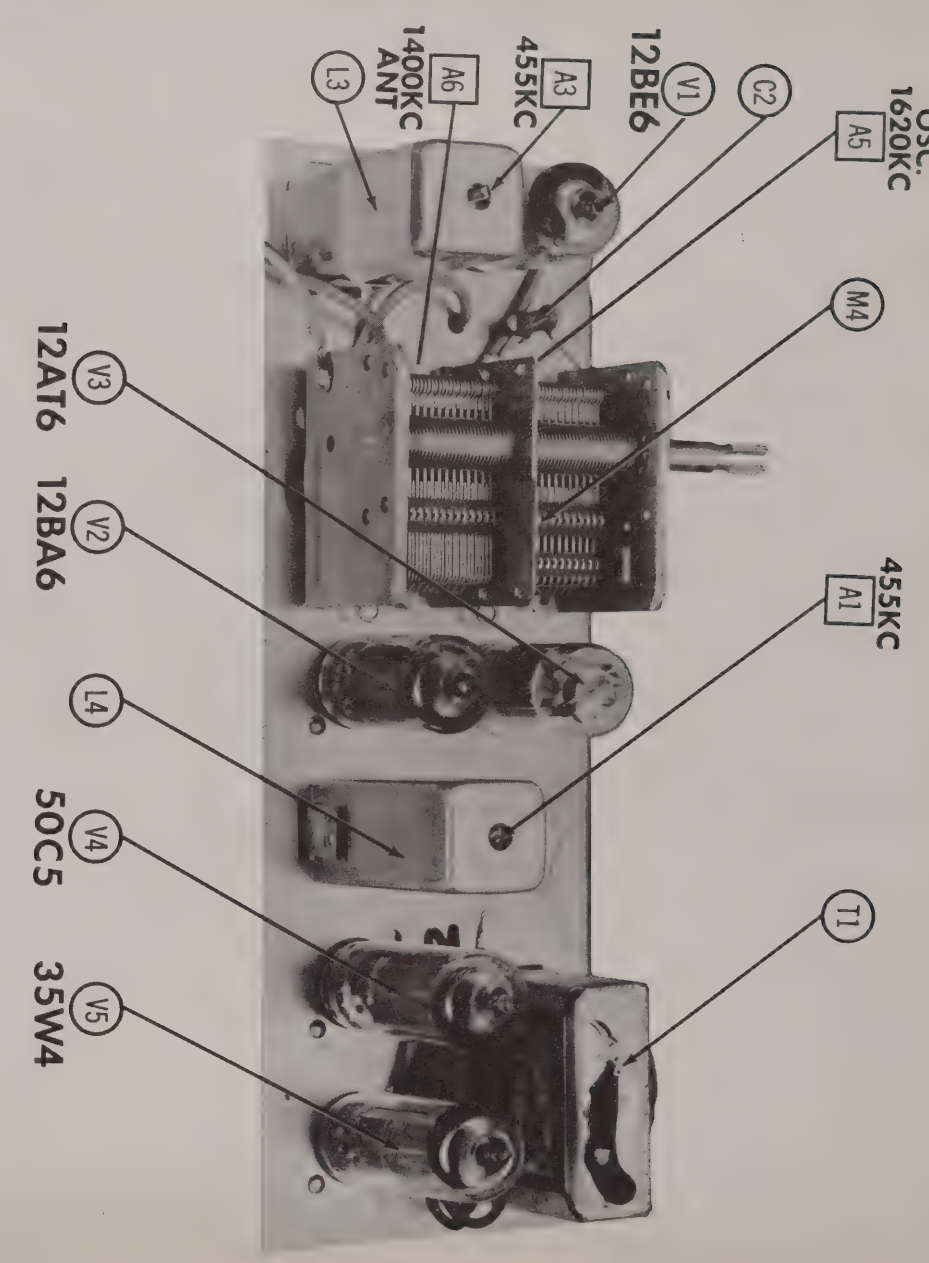
ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	JACKSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	500K	½		Q13-133	AG-60-Z	AN-60	Volume Control and Switch
B	Shaft			Not Req.	KSS-3	AK-2	Attach to R1A per instructions
C	Switch			76-1	SWB	K-155	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	JACKSON PART No.	IRC PART No.	
R2	22KΩ	½		BTS-22K	Oscillator Grid
R3	150KΩ	½		BTS-150K	IF Transformer Shunt
R4	1Meg	½		BTS-1Meg	AVC Network
R5	10Meg	½		BTS-10Meg	AF Amplifier Grid
R6A	500KΩ	½	♦	BTS-470K	AF Amplifier Plate
B	500KΩ	½		BTS-470K	Output Grid
R7	150Ω	½		BTS-150	Output Cathode
R8	1Meg	½		BTS-1Meg	Tone Compensation
R9	680KΩ	½		BTS-680K	Phono Pick Up Shunt
R10	2200Ω	1		BTA-2200	Filter
R11	15Ω	½			Rectifier Ballast
R12	200KΩ	½		BTS-220K	Isolation

♦ Items R6A, B and C5A, B, C are combined in one unit

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		JACKSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2.5KΩ	3.7Ω	210Ω	.6Ω		A-3876	A-2928	RO-2	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	JACKSON PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3.7Ω		ST-105 Mod. P5-X	5A1	
	CONE DIA.	V. C. DIA.				
SP2	4 3/4"	9/16"				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	JACKSON PART No.	MERIT PART No.	
L1	Loop Ant.	1.8Ω				
L2	Osc. Coil	.7Ω	5.2Ω			
L3	Input IF	12.2Ω	13.5Ω			
L4	Output IF	11Ω	12.2Ω			

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	JACKSON PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		LQD-1J	"Q" Q-33			96-T	0-1 or S-1 and 0-3 or S-3	* Tone Arm
		*7-D		* 90ID		* 2696		

ASTATIC AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

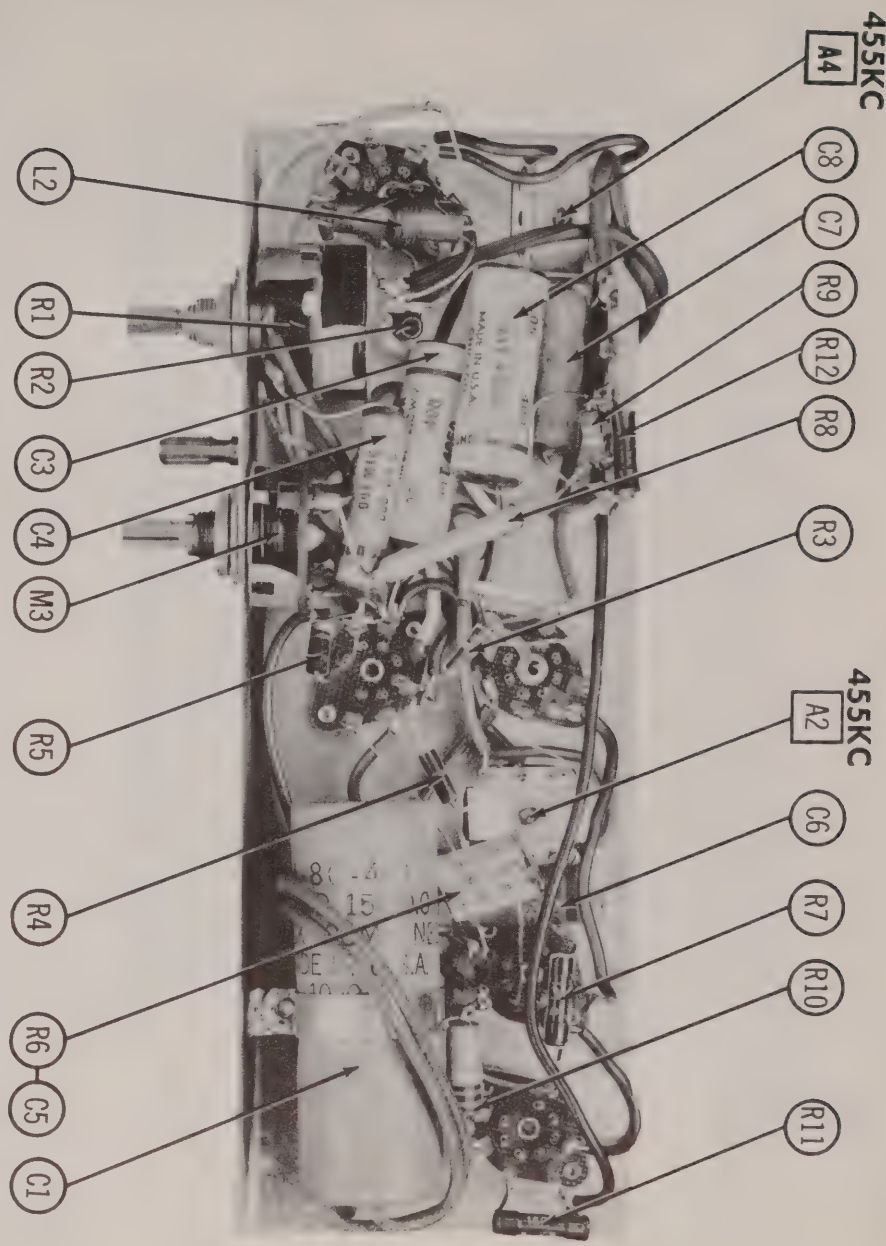
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	JACKSON PART No.	WALCO PART No.	JENSEN PART No.	
M2		W-2A or W-2S and W-2MGA or W-2MGS	A-81 or A-80 and A-81LP or A-80LP	

MISCELLANEOUS

ITEM No.	PART NAME	JACKSON PART No.	NOTES
M3	Switch		Radio - Phono
M4	2 gang Var. Cap		(26-462 MMF, 33-200MMF)

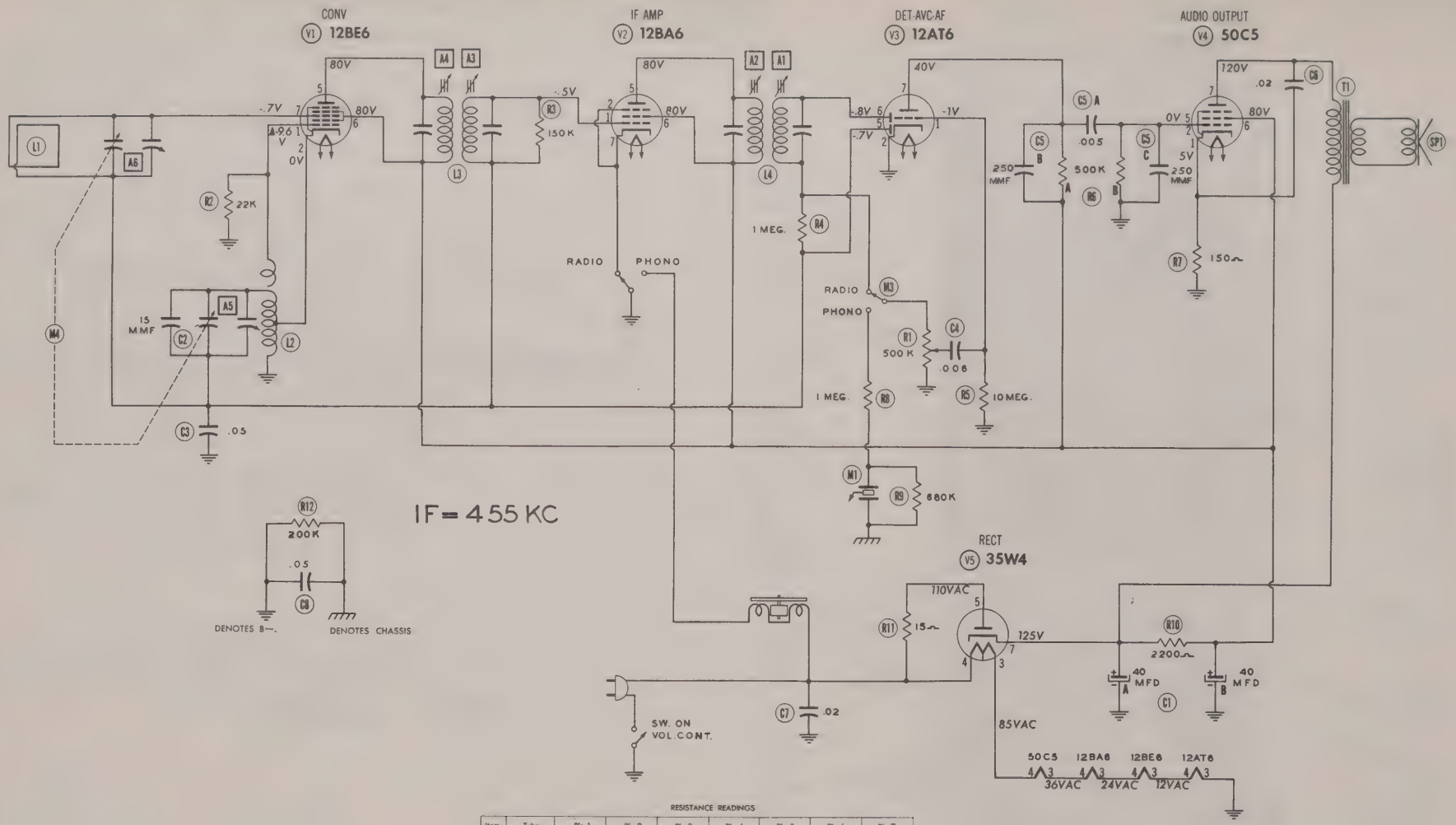
CHASSIS—BOTTOM VIEW



SET 156 FOLDER 7

JACKSON MODEL DP-51

JACKSON MODEL DP-51



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	25KΩ	.8Ω	12Ω	24Ω	†2.2KΩ	†2.2KΩ	1.5Meg
V 2	12BA6	1.6Meg	0Ω	24Ω	36Ω	†2.2KΩ	†2.2KΩ	0Ω
V 3	12AT6	10Meg	0Ω	0Ω	12Ω	1.5Meg	500KΩ	†500KΩ
V 4	50C5	300Ω	500KΩ	36Ω	86Ω	500KΩ	†2.2KΩ	†210Ω
V 5	35W4	Inf.	0Ω	86Ω	121Ω	136Ω	110Ω	70KΩ

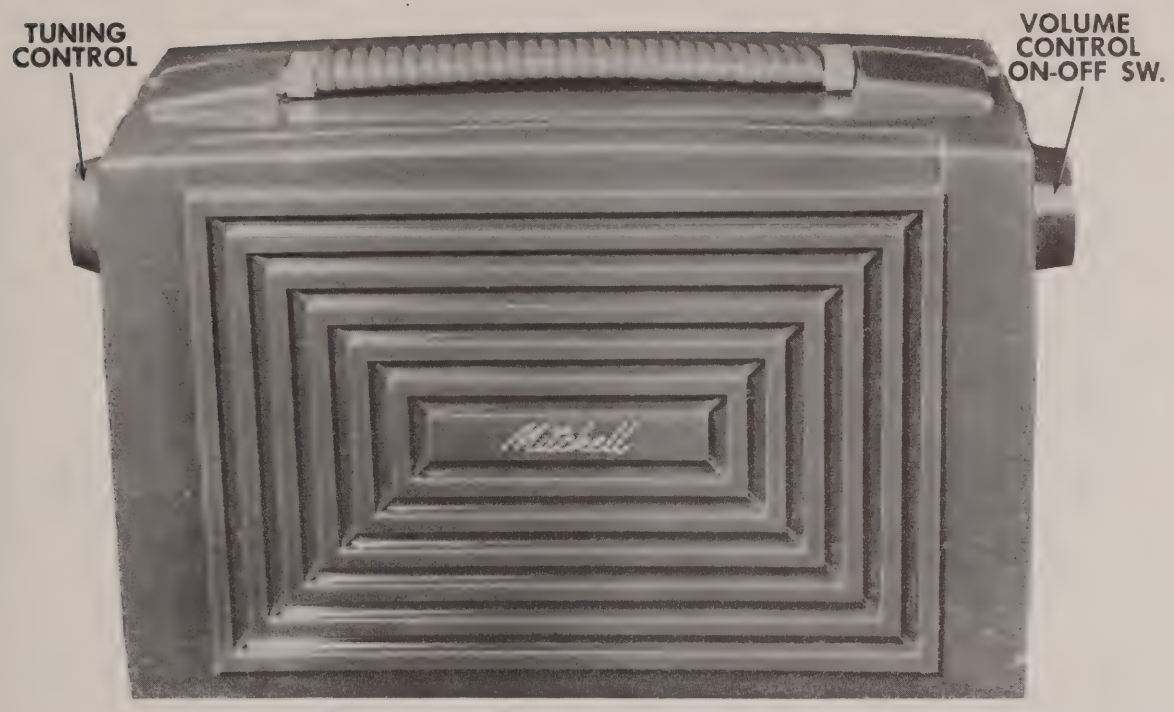
ALL MEASUREMENTS TAKEN IN RADIO POSITION
†MEASURED FROM PIN 7 OF V5
▲ TAKEN WITH VACUUM TUBE VOLTMETER

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1952

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



MITCHELL
MODEL 1256

MITCHELL
MODEL 1256

TRADE NAME	Mitchell Model 1256
MANUFACTURER	Mitchell Mfg. Co., 2525 N. Clybourne Ave., Chicago, Ill.
TYPE SET	Three Power Portable Superhetrodyne Receiver with Loop Antenna
TUBES (FOUR)	Types 1R5 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Power Output.
POWER SUPPLY	110-120 Volts AC-DC or 4.5 Volt "A" Battery & 90 Volt "B" Battery
RATING	.14 Amp. @ 117 Volts AC or 150MA @ 4.5Volts DC & 10.5MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B -.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to Pin 4, (Grid) of 1R5, (V1). Low side to B -.	455KC (400~Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output, If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune for max. output.	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	600KC	600KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat steps 2, 3, & 4.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1952 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

MITCHELL MODEL 1256

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MITCHELL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	Converter	1R5	1R5	7AT	
V2	IF Amplifier	1U4	1U4	6AR	
V3	Det-AVC-AF Amp.	1U5	1U5	6BW	
V4	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MITCHELL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	N-6841	AFH 4-34		UP53315C10			▲ Filter
B	30	150							■ Filter
C	30	150							▲ Filter
D	100	25							Fil. Filter
C2	50		N-6375	SI50	D6-500	5W5Q5	GP1K-500	5GA-Q5	Osc. Grid Cap.
C3	.005	600	N-4894	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Osc. Anode
C4	.1	200	N-1351	P288-1	DF-104	PTE4P1		2TM-P1	Conv. Fil.
C5	.05	200	N-1345	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C6	.002	600	N-6377	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	IF Amp. Grid
C7	100		N-6015	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	Diode RF Filter
C8	.005	600	N-4894	P688-002	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C9A	.005			P688-005		PTE6D5	GP2-333-502	6TM-D5	AF Amp. Screen
B	100		•N-8330	SI100	•PC-91	5W5T1	GP1K-101	5GA-T1	AF Amp. Plate
C	.005			P688-005		PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C10	.002	600	N-6377	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Power Output Plate
C11	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Line Filter
C12	.05	200	N-1345	P288-05	DF-503	PTE4S5		2TM-S5	Line Isolation

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MITCHELL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	½	N-8332	Q13-137	AG-63-Z	BKS-70-S	Volume Contorol and Switch
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A as per instructions
C	Switch			76-2	SWB-2	Not Req.	Attach to R1A as per instructions

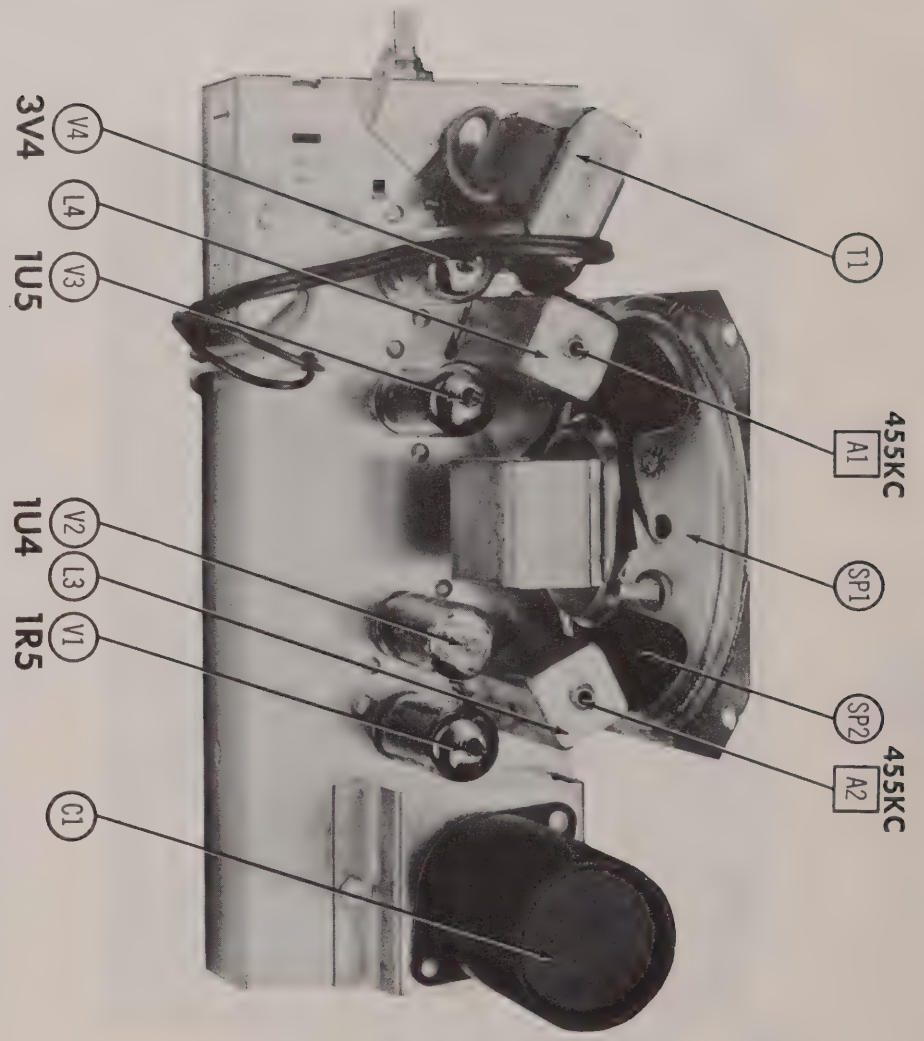
* Some Models use a 1 Meg Control with a 47K Stop Part No. N-8332-P

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MITCHELL PART No.	IRC PART No.	IDENTIFICATION CODES
R2	100K Ω	½	N-1973	BTS-100K	Oscillator Grid
R3	22KΩ	½	N-6012	BTS-22K	Converter Anode
R4	6.8Meg	½	N-4028	BTS-6.8Meg	IF Grid
R5	4.7Meg	½	N-4061	BTS-4.7Meg	AVC Network
R6	6.2Meg	½	N-4028	BTS-6.2Meg	AF Amplifier Grid
R7A	4.7Meg	½		BTS-4.7Meg	AF Amplifier Screen
B	1Meg	½		BTS-1Meg	AF Amplifier Plate
C	2.2Meg	½		BTS-2.2Meg	Output Grid
R8	220KΩ	½	N-4026	BTS-220K	Bias Network
R9	1300 Ω	½	N-6793	BTS-1300	Filament String
R10	27Ω	½	N-6792	BTS-1300	Filament String
R11	1300 Ω	½	N-6793	BTS-1300	Filament String
R12	470 Ω	½	N-4066	BTS-470	Filament String
R13A	1650 Ω	2.8	N-8333		Filter - Wire Wound
B	1650Ω	2.8			Filament Dropping - Wire Wound
R14	2200Ω	½		BTS-2200	Filter
R15	75Ω	2	N-4023	BTA-75	Surge Limiter - See Note 1
R16	330Ω	½	N-4420	BTS-330	Bias Network

Note 1 - Some Models use two 150Ω Resistors in parallel, in place of R15.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MITCHELL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	7.5KΩ	3.2Ω	435Ω	.5Ω	N-8329	A-3329	A-2927①	RO-2	① Drill one New Mounting Hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	MITCHELL PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3.2Ω	N-6681	ST-113 Mod. P4-X	4A1	
	CONE DIA.	V. C. DIA.				
SP2	4"	9/16"				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	MITCHELL PART No.	MERIT PART No.	
L1	Loop Ant.	.2Ω		N-8328		
L2	Osc. Coil	2.2	5Ω	N-8327	BC-397	
L3	Input IF	15Ω	15Ω	N-7981	BC-352	
L4	Output IF	23Ω	23Ω	N-8326	BC-353	

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	MITCHELL PART No.	SYLVANIA PART No.	SELETRON PART No.	
M1	.062A	N-8331	NB5	5M4	

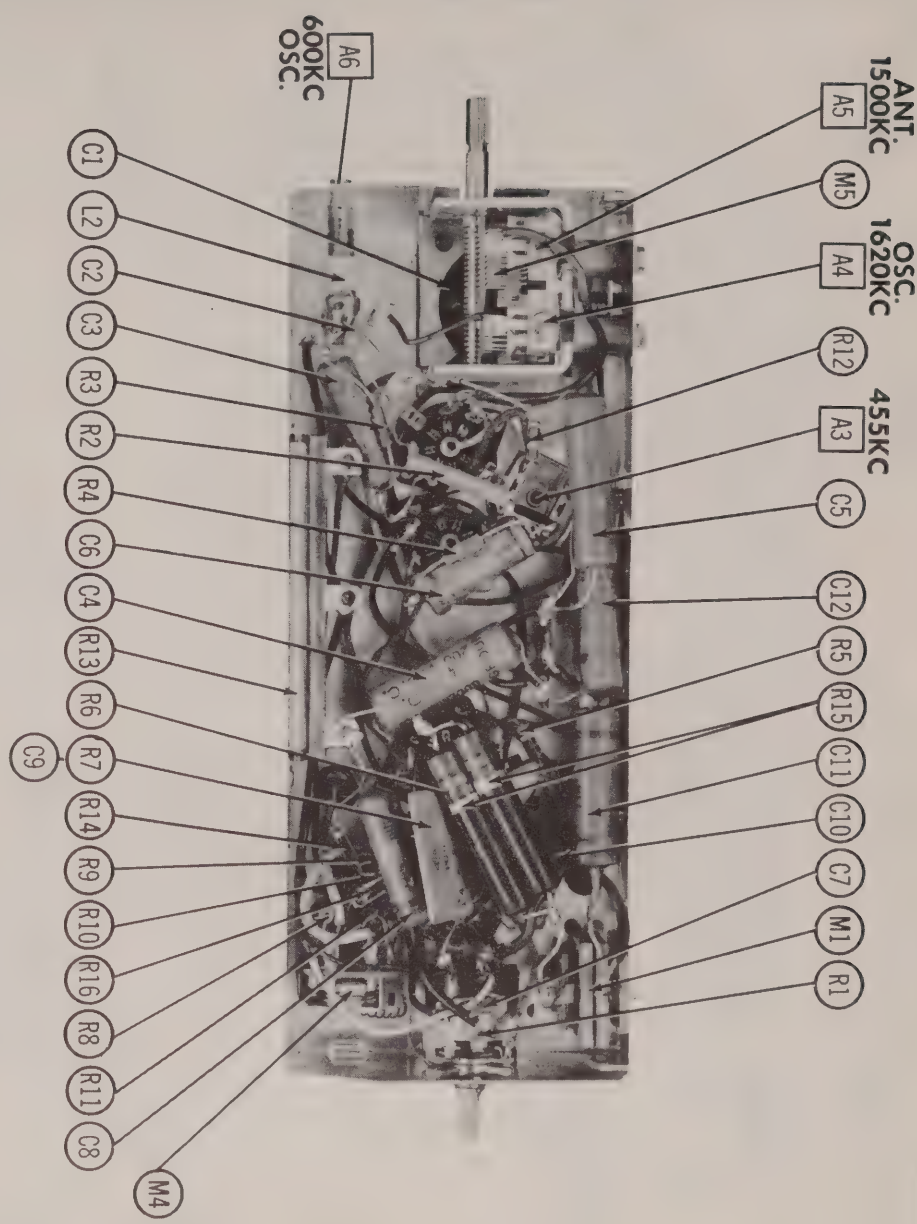
BATTERIES

ITEM No.	VOLTAGE	MITCHELL PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	4.5V "A"		736			F3			
M3	90V "B"			490			N-60		

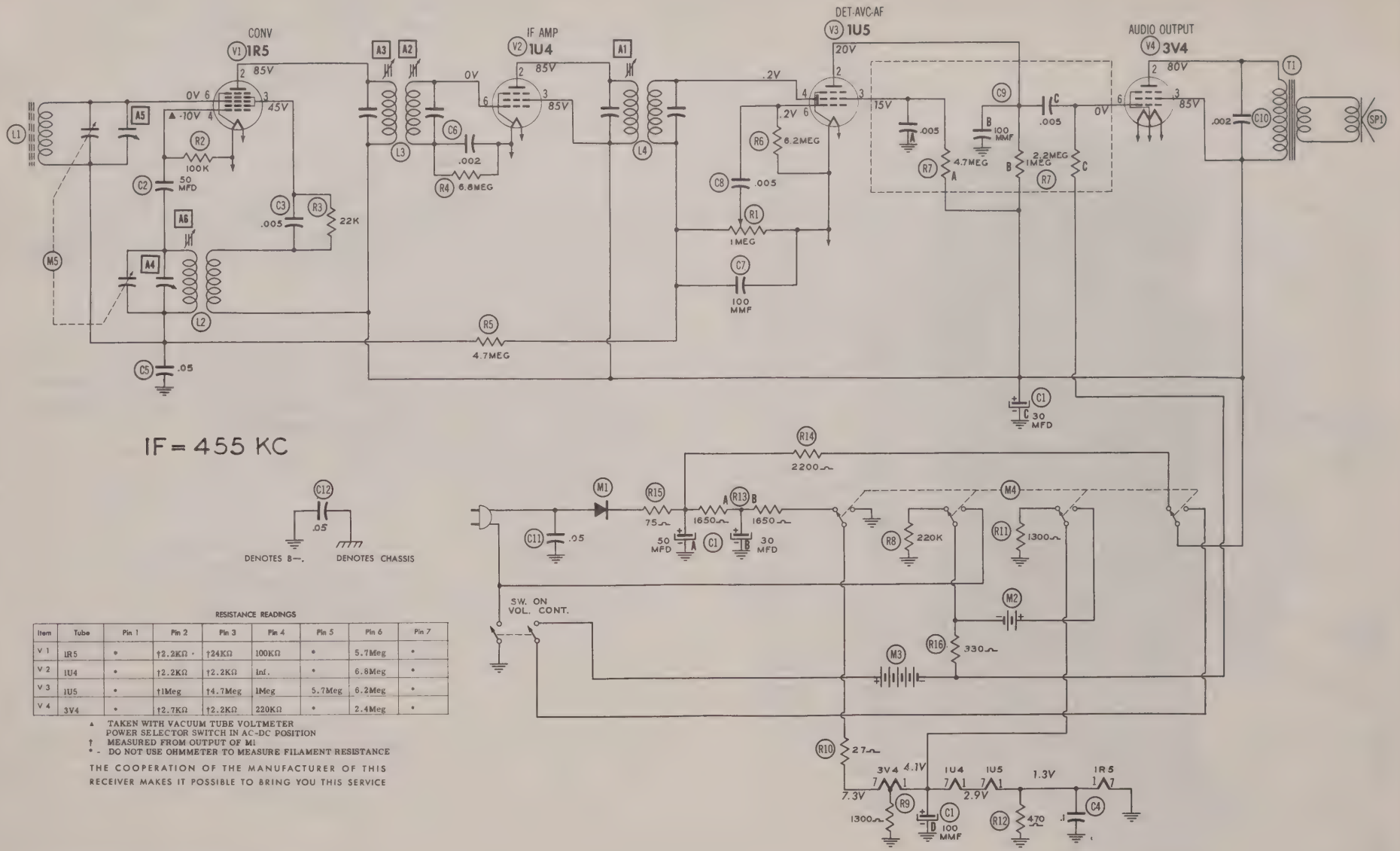
MISCELLANEOUS

ITEM No.	PART NAME	MITCHELL PART No.	NOTES
M4	Switch	N-5951	Power Change-Over
M5	2 Gang Var. Cap.	N-8321	(17-292MMF, 15-152MMF)

CHASSIS—BOTTOM VIEW



MITCHELL MODEL 1256



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	•	†2.2KΩ ·	†24KΩ	100KΩ	•	5.7Meg	•
V 2	1U4	•	†2.2KΩ	†2.2KΩ	Inf.	•	6.8Meg	•
V 3	1U5	•	†1Meg	†4.7Meg	1Meg	5.7Meg	6.2Meg	•
V 4	3V4	•	†2.7KΩ	†2.2KΩ	220KΩ	•	2.4Meg	•

▲ TAKEN WITH VACUUM TUBE VOLTMETER
POWER SELECTOR SWITCH IN AC-DC POSITION
† MEASURED FROM OUTPUT OF M1
• - DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE

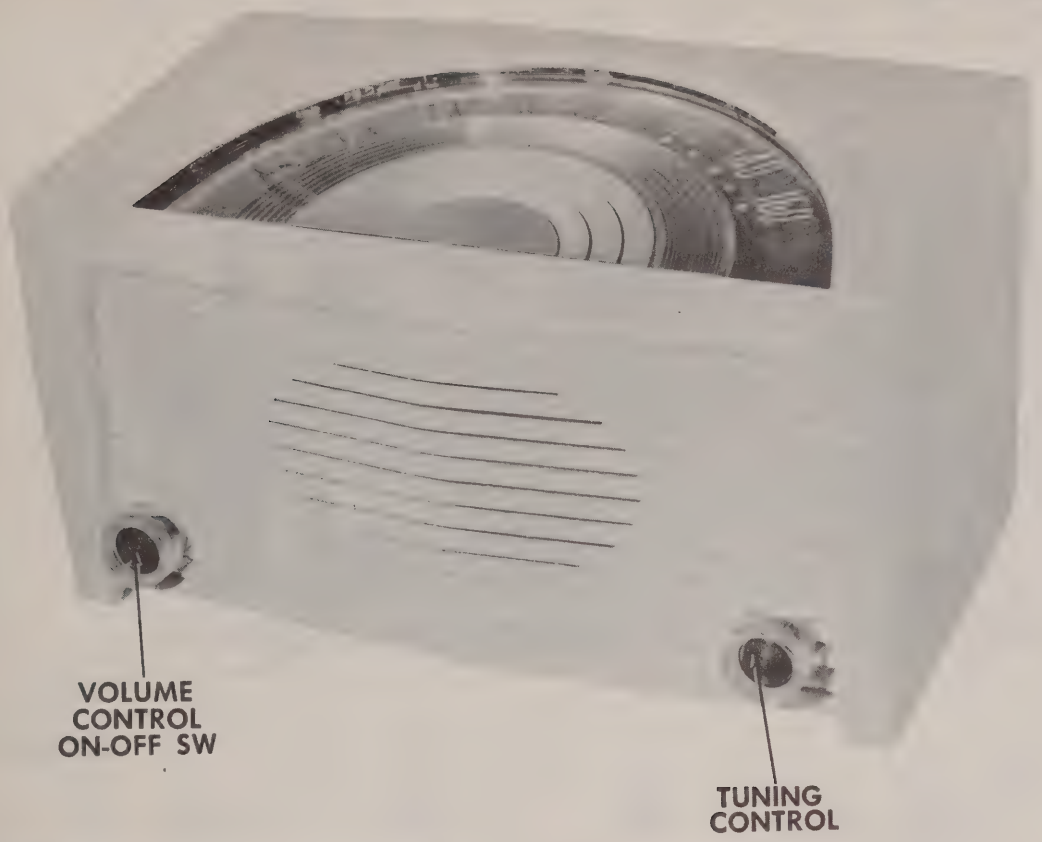
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1952

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHILCO
MODELS 52-940, 52-941, 52-942



PHILCO
MODELS 52-940, 52-941, 52-942

TRADE NAME	Philco Models 52-940, 52-941, 52-942
MANUFACTURER	Philco Corp., Tioga and "C" Sts., Philadelphia, Pa.
TYPE SET	AC-DC Operated Superheterodyne Receiver With Loop Antenna
TUBES (SIX)	Types 7B7 RF Amp., 7A8 Conv., 7B7 IF Amp., 14B6 Det-AVC-AF Amp., 35L6 Power Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-DC
RATING	.25 Amp. @ 117Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set pointer over the last scribe mark at the left end of the pointer carriage slide. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator on rear section of tuning gang. Low side to B-.	455KC (400~ mod.)	Tuning gang fully open.	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620KC	"	"	A5	Pre-set A8 ½ turn counter clockwise from tight. Fashion loops of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1500KC	Tune for max. output.	"	A6, A7	"
4.		"	680KC	Set pointer over second scribe mark from left.	"	A8, A9	Rock tuning gang while adjusting for maximum output. Repeat steps 2, 3, and 4 until no further improvements can be made.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1952 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

PHILCO MODEL 52-940

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	RF Amplifier	7B7	7B7	8V	
V2	Converter	7A8	7A8	8U	
V3	IF Amplifier	7B7	7B7	8V	
V4	Det-AVC-AF Amp.	14B6	14B6	8W	
V5	Power Output	35L6	35L6	7AC	
V6	Rectifier	35Z5	35Z5	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150	30-2575-27	PRS150/40-40-40		EDL44415		TVA-3451	Filter (orange)
B	30	150							Filter (blue)
C	30	150							Filter (red)
C2	5		30-1230	SI5NP	TCZ-4.7		NP0K-050		RF Coupling
C3	.05	200	61-0122	P288-05	DF-503	PTE4S5		2TM-S5	RF Bypass
C4	47	500	60-00475417	1469-00005		5R5Q5		MS-45	Osc. Grid Cap.
C5	13		30-1224-68				N750K-130		Fixed Trimmer
C6	.05	400	61-0122	P488-05	DF-503	PTE4S5		4TM-S5	AVC Filter
C7	.01	400	61-0120	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C8A	.007		30-1239-4	P688-0068	D6-682		GP2-333-682	6TM-D68	AudioCoupling
B	220			SI220	D6-221	5W5T25	GP2K-221	5GA-T22	Power Output Grid
C9	.02	400	61-0108	P488-02	DF-203	PTE4S2		4TM-S2	Power Output Plate
C10	.047	400	45-3505-45	P488-047	DF-503	PTE4S5		4TM-S47	Line Filter
C11	.1	400	61-0113	P488-1	DF-104	PTE4P1		4TM-P1	Line Isolation

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	33-5566-13	Q13-133	AG60-Z	B-60-S	Volume Control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R1A per instructions.
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A per instructions.

RESISTORS

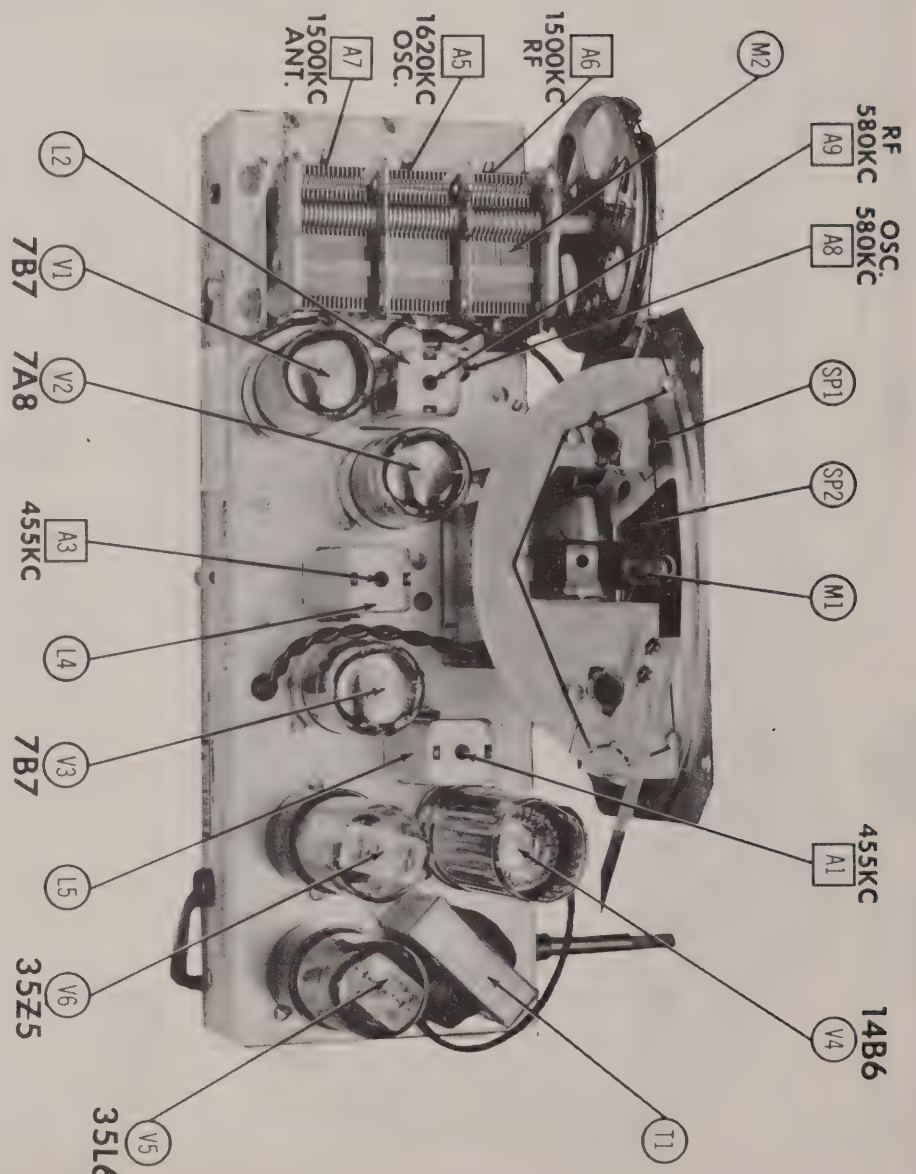
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES
R2	150KΩ	½	66-4158340	BTS-150K	Antenna Loading
R3	2.2Meg	½	66-5228340	BTS-2.2Meg	AVC Network
R4	22KΩ	½	66-3228340	BTS-22K	Screen Dropping
R5	100KΩ	½	66-4108340	BTS-100K	Oscillator For Grid
R6	47KΩ	½	66-3478340	BTS-47K	Diode RF Filter
R7	2.2Meg	½	66-5228340	BTS-2.2Meg	AVC Network
R8	3.3Meg	½	66-5338340	BTS-3.3Meg	AF Amplifier Grid
R9	470KΩ	½	66-4478340	BTS-470K	AF Amplifier Plate Load
R10	470KΩ	½	66-4478340	BTS-470K	Output Grid
R11	130Ω	½	66-1138340	BTS-120	Putput Cathode
R12	1200Ω	½	66-2128340	BTS-1200	Filter
R13	220Ω	1	66-1224340	BTA-220	Filter
R14	150KΩ	½	66-4158340	BTS-150K	Line Isolation
R15	100Ω		33-1343-3		Filament Dropping

NOTE: Item 15 is a special negative temperature co-efficient resistor.-Order from manufacturer.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1A	2.6KΩ	3.5Ω	300Ω	.8Ω	32-8310-5	A-3876	A-2928	R0-2	
B	2.6KΩ	3.5Ω	300Ω	.8Ω	32-8310-3	A-3876	A-2928	R0-2	Alternate Transformer

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	PHILCO PART No.	VIKING PART No.	QUAM PART No.	
SP1	P.M.	3.5 Ω	33-1633-5 33-1633-1 ②	46J6 46J6	46A1 ① 46A1 ①	① Use Universal Mounting Bracket ② Alternate Speaker
	CONE DIA.	V. C. DIA.				
SP2	4in. X6in.	9/16 in.				

COILS (RF-IF)

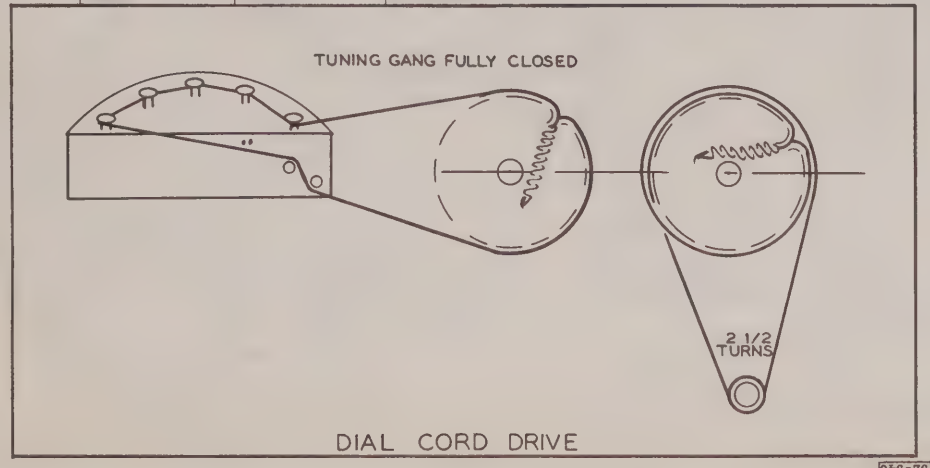
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	PHILCO PART No.	MERIT PART No.	
L1A	Loop Ant.	3.2Ω		32-4052-58		Used with Model 52-941
B	Loop Ant.			32-4052-57		Used with Model 52-940
C	Loop Ant.			32-4052-59		Used with Model 52-942
L2	RF Coil	90Ω	4.8Ω	32-4399-2A	BC-391	
L3	Osc. Coil	2.5Ω	5.2Ω	32-4263-2	BC-397	
L4	Input IF	12.5Ω	12Ω	32-4160A	BC-352	
L5	Output IF	15.5Ω	15.5Ω	32-4240-3A	BC-353	

DIAL LIGHTS

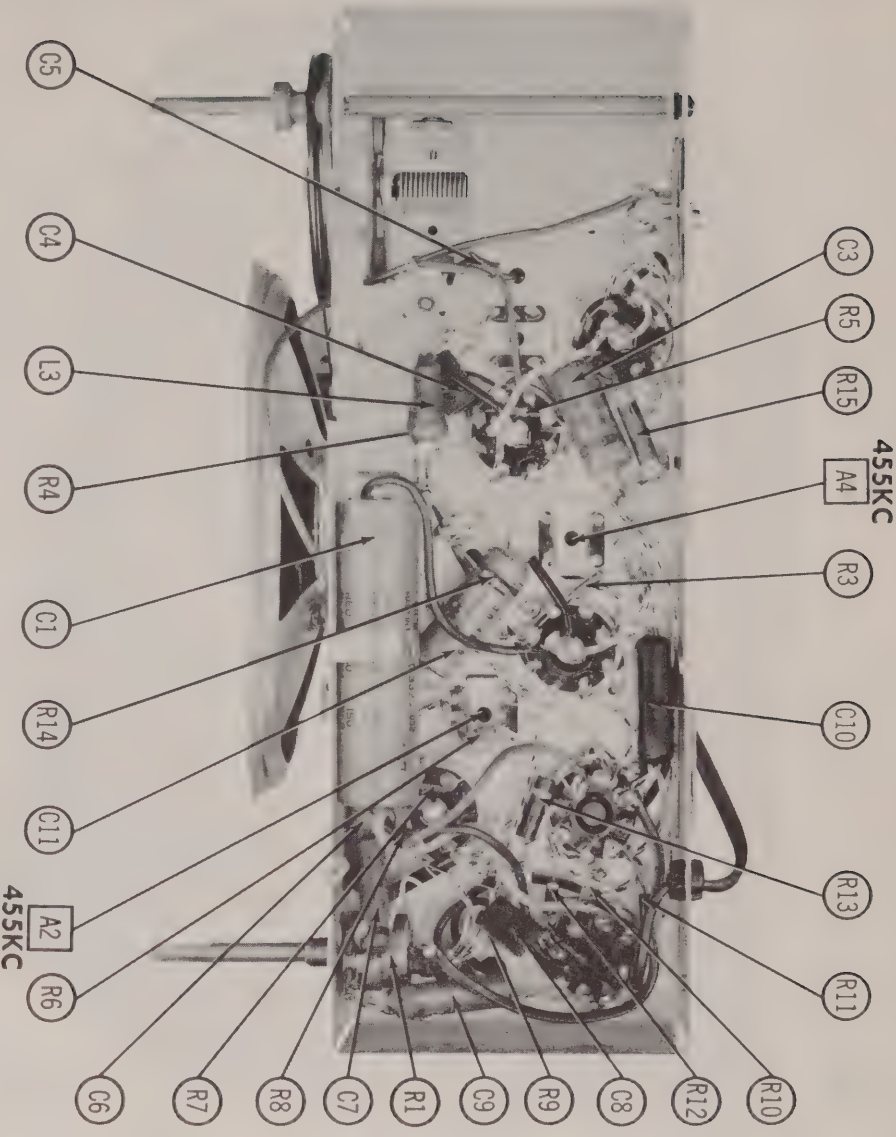
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					PHI LCO PART No.		
M1	Bayonet	6-8	.150	Brown	34-2068		Type #47

MISCELLANEOUS

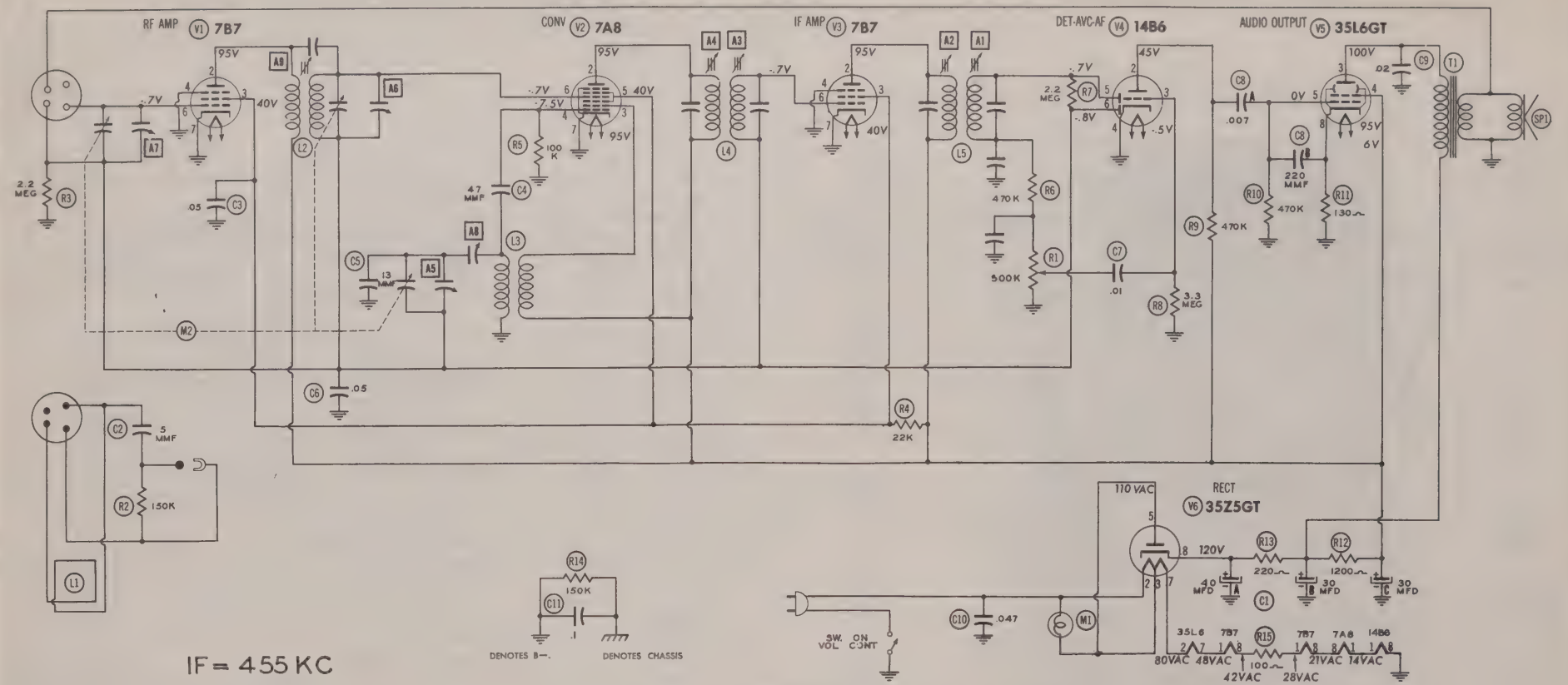
ITEM No.	PART NAME	PHILCO PART No.	NOTES
M2	3 Gang Var. Cap.	31-2748-1	(12-496MMF each section)
A8	Trimmer	31-6473-17	Osc. Padder
	Cabinet	10770-3	Model 52-940 (Gray)
	Cabinet	10770-4	Model 52-940 (Mahogany)
	Cabinet	10771	Model 52-941
	Cabinet	10772	Model 52-942
	Knobs	54-4718-7	Model 52-940 (Gray)
	Knobs	54-4718-4	Model 52-940 (Mahogany)
	Knobs	54-4718-5	Model 52-941
	Knobs	54-4718-3	Model 52-942



CHASSIS—BOTTOM VIEW



PHILCO MODEL 52-940



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	7B7	28Ω	†1.4KΩ	†23KΩ	0Ω	0Ω	1.2Meg	0Ω	21Ω
V 2	7A8	14Ω	†1.4KΩ	†1.4KΩ	100KΩ	†23KΩ	1.2Meg	0Ω	21Ω
V 3	7B7	135Ω	†1.4KΩ	†23KΩ	0Ω	0Ω	1.2Meg	0Ω	128Ω
V 4	14B6	14Ω	†470KΩ	3.3Meg	0Ω	1.2Meg	550KΩ	0Ω	0Ω
V 5	35L6GT	INF	170Ω	†520Ω	†1.4KΩ	470KΩ	†220Ω	135Ω	130Ω
V 6	35Z5GT	†1.4KΩ	205Ω	188Ω	0Ω	188Ω	†220Ω	170Ω	50KΩ

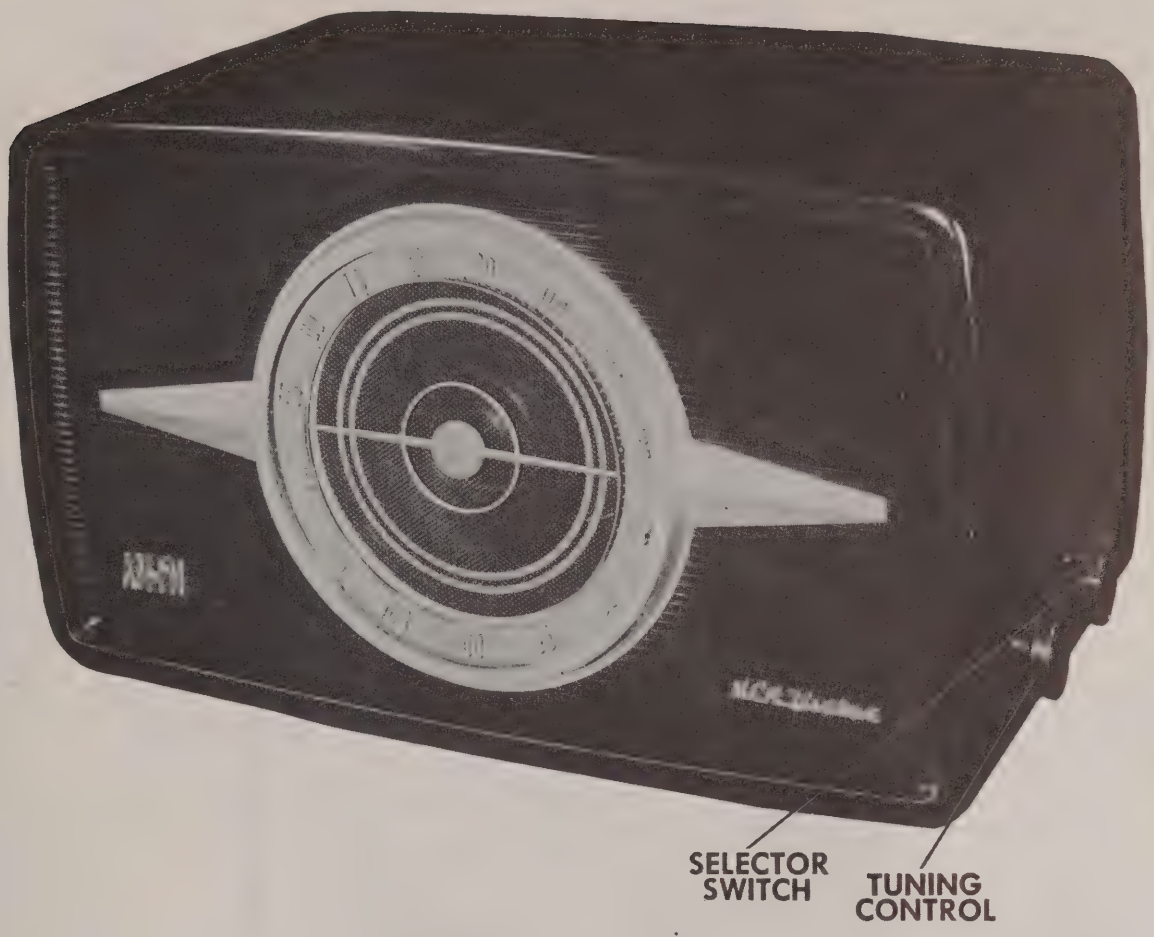
▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 8 OF V6

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1952

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RCA
MODEL 1R81 (Ch. RC-1102)

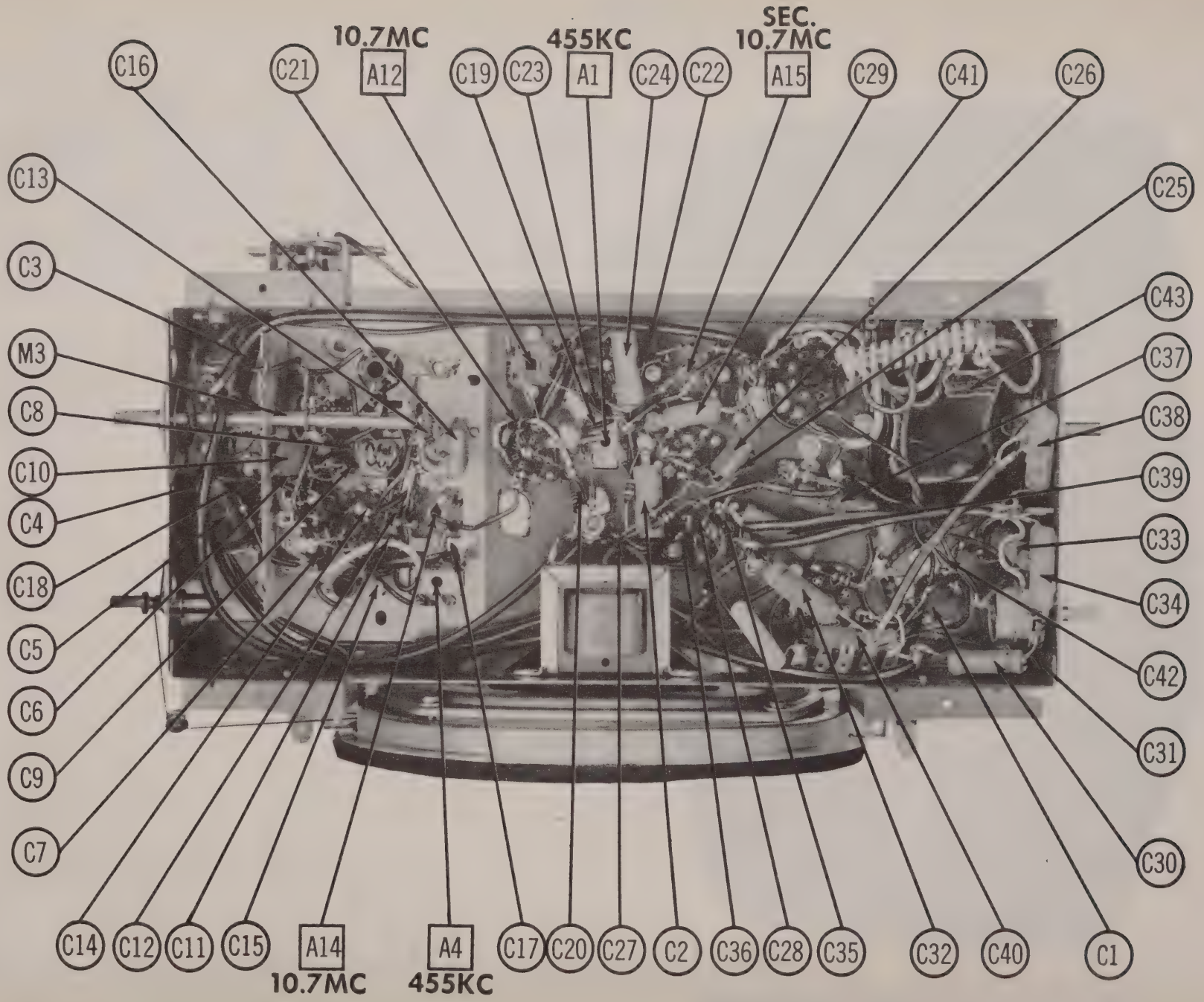


RCA
MODEL 1R81 (Ch. RC-1102)

TRADE NAME	RCA Victor Model 1R81 (Ch. RC 1102)
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, N. J.
TYPE SET	AC operated AM-FM Superheterodyne Receiver with Loop Antenna
TUBES (EIGHT)	Types 6AU6 FM-AM RF Amp. 6X8 AM-FM Conv., 6BA6 1st FM-AM IF Amp., 6AU6 2nd FM IF Amp., 6AL5 Ratio Det., 6AU6 AM Det. - AVC-AF Amp., 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC RATING .62 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST 540-1600KC FREQ. MOD. 88-108MC	

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1952 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America


10.7MC
A12
455KC
A1
SEC.
10.7MC
A15
C16
C21
C19
C23
C24
C22
C29
C41
C26
C13
C25
C3
C43
M3
C37
C8
C38
C10
C39
C4
C33
C18
C34
C5
C42
C6
C31
C9
C30
C7
C14
C12
C11
C15
A14
10.7MC
A4
455KC
C17
C20
C27
C2
C36
C28
C35
C32
C40
C1

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RCA VICTOR PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	FM-AM RF Amp.	6AU6	6AU6	7BK	
V2	AM-FM Converter	6X8	6X8	9AK	
V3	1st FM-AM IF Amp.	6BA6	6BA6	7BK	
V4	2nd FM IF Amp.	6AU6	6AU6	7BK	
V5	Ratio Detector	6AL5	6AL5	6BT	
V6	Detector-AVC-AF Amplifier	6AV6	6AV6	7BT	
V7	Power Output	6V6GT	6V6GT	7AC	
V8	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

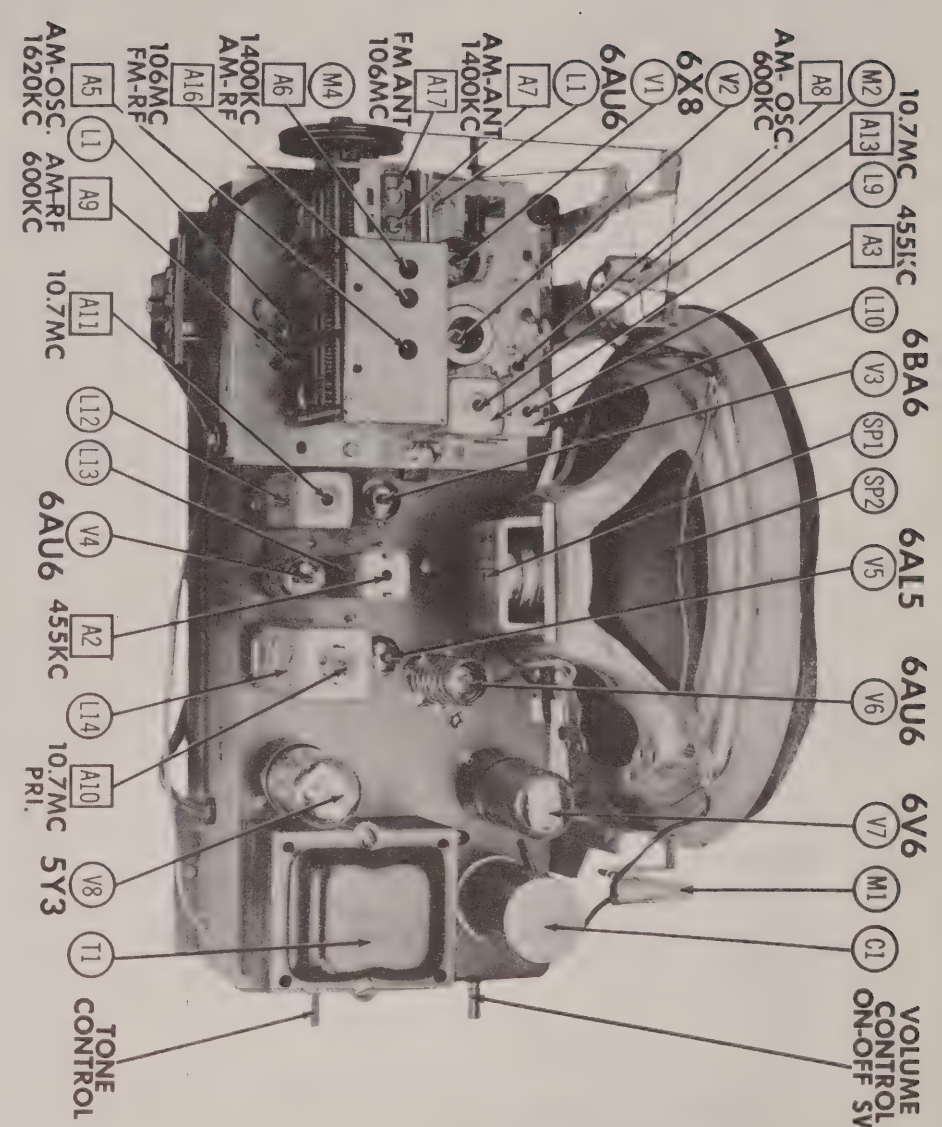
Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

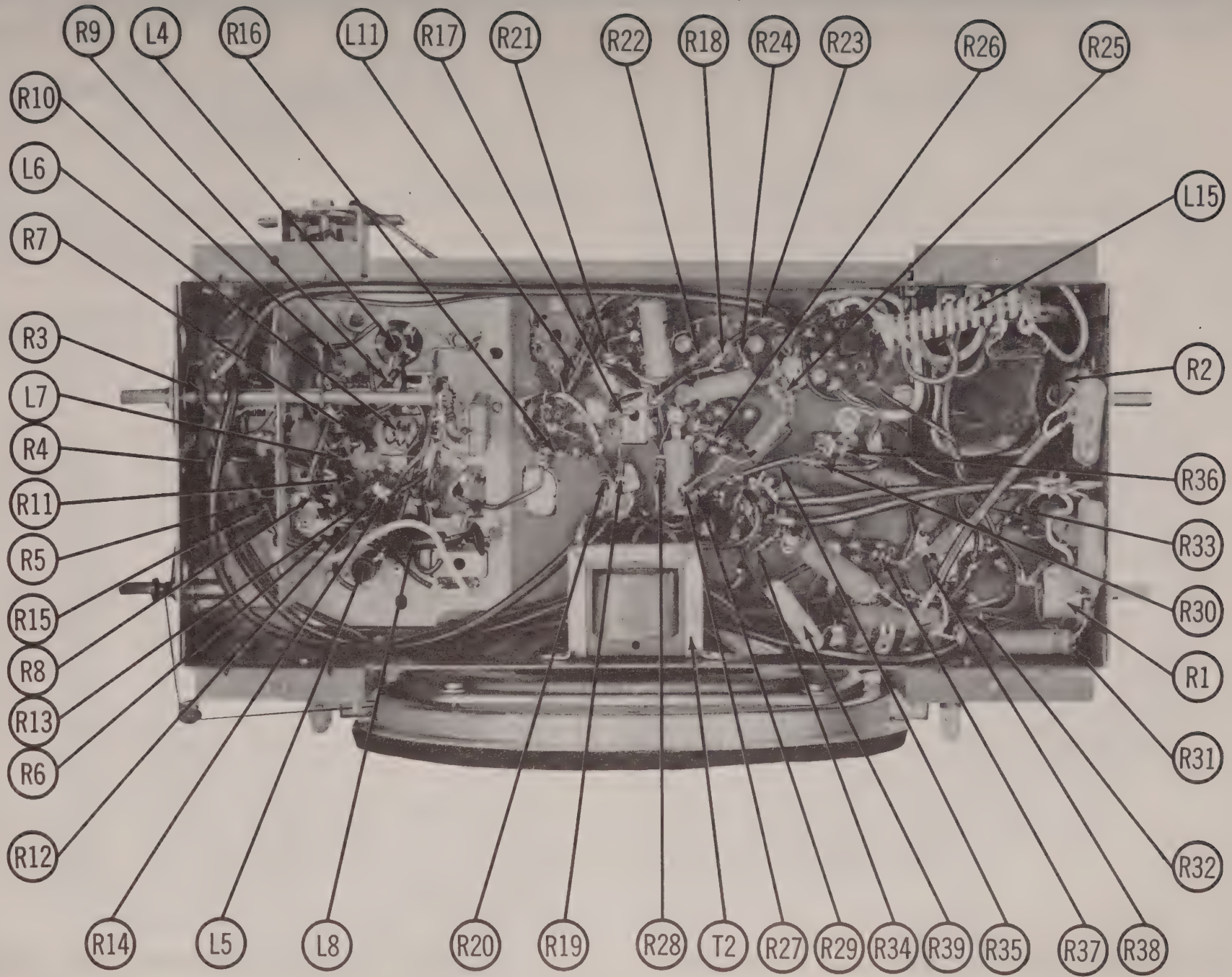
ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RCA VICTOR PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	350	76330	AFH 4-100		UP33245C		TVL-4605	▲Filter
B	50	300							■Filter
C	20	25							▲Power Output Cathode
C2	2	50	73747	PRS150/4		BBR2 -50		TVA-1301	Stabilizing
C3	3		57090	SI3NP0			NP0K-030		AM RF Coupling
C4	220		75611	SI220	D6-221	5W5T25	GP2K-221	5GA-T22	RF Coupling
C5	.047	200	73558	P288-047	DF-503	PTE4S5		2TM-S47	AVC Filter
C6	2700	500	39662	1467-003	D6-272	1W5D3	GP2-333-272	1FM-23	RF Amp. Fil.
C7	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	RF Amp. Screen
C8	120		76347	SI121	D6-121	5W5T15	GP1K-121	5GA-T12	FM RF Coupling
C9	220		75611	SI220	D6-221	5W5T25	GP2K-221	5GA-T22	RF Coupling
C10	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	RF Bypass
C11	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	Osc. Plate
C12	47		76348	SI47	D6-470	5R5Q5	GP1K-470	5GA-Q47	OSC. Grid Cap
C13	10		76350				N470K-100		Fixed Trimmer
C14	1		76677		TCZ-1		NP0K-010		FM Osc. Coupling
C15	12		76349				N330K-120		Fixed Trimmer
C16	4700	500	39668	1467-005	D6-472	1D5D5	GP2-333-472	1FM-25	Mixer Decoupling
C17	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	AVC Filter
C18	.047	200	73558	P288-047	DF-503	PTE4S5		2TM-S47	AVC Filter
C19	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	1st IF Amp. Plate
C20	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	1st IF Amp. Screen
C21	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	1st IF Amp. Fil.
C22	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	2nd FM IF Amp. Plate
C23	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	2nd FM IF Amp. Screen
C24	.0047	400	73920	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	2nd FM IF Amp. Cathode
C25	330	500	39640	1469-00035					Diode Load Cap.
C26	330	500	39640	1469-00035					Diode Load Cap.
C27	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	RF Bypass
C28	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	FM AVC Filter
C29	.0047	400	73920	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	De-emphasis
C30	.001	600	75249	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Audio Coupling
C31	150		44202	SI150	D6-151	5W5T15	GP2K-151	5GA-T15	Tone Comp.
C32	.027	200	73554						Tone Comp.
C33	.015	200	73797	P288-015					Tone Comp.
C34	.022	200	73562	P488-022	DF-203	PTE4S2		4TM-S22	Audio Coupling
C35	100		75437	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	AF Amp. Plate
C36	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	AF Amp. Fil.
C37	.1	200	73784	P288-1	DF-104	PTE4P1		2TM-P1	Tone Comp.
C38	.0047	400	73920	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Tone Comp.
C39	.01	400	73561	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C40	.0027	1000	73818						Power Output Plate
C41	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	Line Filter
C42	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	Line Filter
C43	150	500	39632	1468-00015	D6-151	5W5T15	GP2K-151	1FM-315	FM Ant. Line Isolation

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA Victor PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1.5Meg	½	70342	Q18-139XX	T95		Volume Control Tapped @ 250KΩ and 500KΩ
B	Switch		Not Req.	76-1	SW-A		Attach to R1A per instructions.
R2A	2Meg	½	75538	Q11-139	AG-83-S	B-75	Volume Control and Switch
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R2A per instructions.

CHASSIS—TOP VIEW




R9
L4
R16
L11
R17
R21
R22
R18
R24
R23
R26
R25
R10
L6
R7
L15
R3
L7
R4
R2
R11
R36
R5
R33
R15
R30
R8
R1
R13
R31
R6
R12
R32
R14
L5
L8
R20
R19
R28
T2
R27
R29
R34
R39
R35
R37
R38

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set Pointer, turn tuning capacitor fully closed and set pointer parallel with base of dial.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to Pin 1, (Grid) of 6X8 (V2). Low side to chassis.	455KC (400∿Mod)	AM (center)	Tuning gang fully open.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output.
2.	Direct	High side to Term. 1 on ant. terminal strip, (disconnect link). Low side to chassis.	1620KC	"	"	"	A5	Adjust for maximum output.
3.	"	"	1400KC	"	Tune for max. output.	"	A6, A7	Adjust for maximum output.
4.	"	"	600KC	"	600KC	"	A8, A9	Connect a 10KΩ resistor across RF section of tuning gang. Rock tuning gang while adjusting A8 for maximum output. Remove 10KΩ resistor and adjust A9 for maximum output. Repeat steps 2, 3, & 4 until no further improvement can be made.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from Point (A) to chassis. The junction of these two resistors is Point (C) as shown on the schematic.
If the peaks of the transformers appear very broad it may be necessary to alternately load the windings to obtain accurate results. Alternate loading consists of connecting a 680Ω resistor across the primary winding while adjusting the secondary of the transformer. While adjusting the primary the resistor is connected across the secondary. Load only one winding at a time and remove the resistor after completing adjustment of each transformer.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	.01MFD	High side to pin 1 (grid), of 6BA6, (V3) Low side to chassis.	10.7MC (unmod.)	FM (CW)	Tuning gang fully closed.	DC probe to point (A). Common to chassis.	A10, A11 A12	Adjust for max. deflection.
6.	"	High side to pin 7, (grid) of 6X8, (V2). Low side to chassis.	"	"	"	"	A13, A14	"
7.	"	"	"	"	"	DC probe to point (B). Common to point C.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
5.	.01MFD	High side to pin 1, (grid), of 6BA6, (V3) Low side to chassis.	10.7MC (450KC Swp)	FM (CW)	Point of non-interference.	Vert. Amp. to point (A). Low side to chassis.	A10, A11 A12	Disconnect stabilizor capacitor C2. Adjust for maximum amplitude and symmetry as per fig. 1.
6.	"	High side to pin 7, (grid), of 6X8 (V2). Low side to chassis.	"	"	"	"	A13, A14	"
7.	"	"	"	"	"	Vert. Amp. to point (B). Low side to chassis.	A15	Reconnect capacitor C2. Adjust A15 so 10.7MC occurs at center of crossover line as per fig. 2. SLIGHTLY retouch A10 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	300 Ω carbon resistor	High side thru 300Ω to ant. terminal 3, (remove line ant.) Low side to chassis.	90MC (unmod.)	FM	90MC	DC probe to point (A). Common to chassis.	L6	Expand or compress coil turns for maximum deflection.
9.	"	"	106MC	"	106MC	"	A16, A17	Adjust for max. deflection.
10.	"	"	90MC	"	90MC	"	L1, L2	Expand or compress coil turns for max. deflection. Repeat steps 8, 9, and 10 until no further improvement can be made.

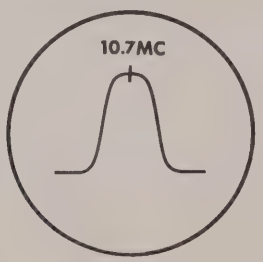


FIG. 1

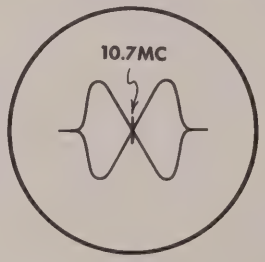
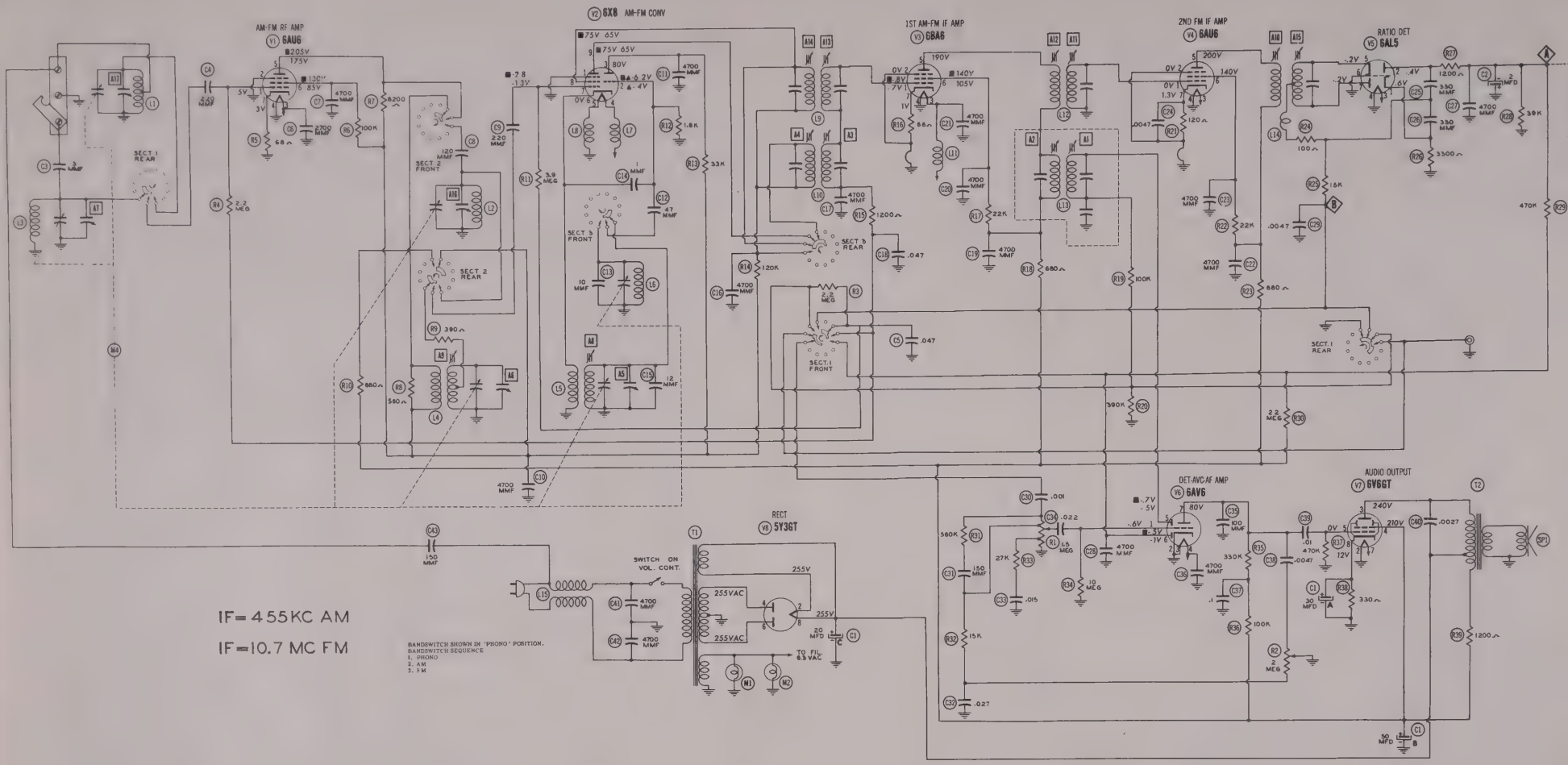


FIG. 2



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AU6	2.7MEG ⌀4.5MEG	0Ω	.1Ω	0Ω	710KΩ ⌀11.8KΩ	†100KΩ	68Ω 6.3MEG ⌀8.5MEG	†120KΩ	
V 2	6X8	0Ω	10KΩ	†33KΩ	.4Ω	.3Ω	1.8Ω			
V 3	6BA6	510KΩ ⌀2.6MEG	0Ω	.1Ω	0Ω	11.8KΩ	†24KΩ	68Ω		
V 4	6AU6	.5Ω	0Ω	1Ω	0Ω	11.8KΩ	†24KΩ	120Ω		
V 5	6AL5	3.3KΩ	60KΩ	.1Ω	0Ω	INF	0Ω	INF		
V 6	6AV6	10Meg	0Ω	.1Ω	0Ω	700KΩ ⌀490KΩ	510KΩ	†430KΩ		
V 7	6V6GT	INF	.1Ω	†370Ω	†1.2KΩ	470KΩ	INF	0Ω	330Ω	
V 8	5Y3GT	0Ω	60KΩ	INF	110Ω	INF	110Ω	INF	60KΩ	

ALL MEASUREMENTS TAKEN IN FM POSITION UNLESS NOTED
† MEASURED FROM PIN 8 OF V8
⌀ MEASURED IN AM POSITION
▲ TAKEN WITH VACUUM TUBE VOLTMETER

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1952

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	RCA VICTOR PART No.	IRC PART No.	
R3	2.2Meg	½	504522	BTS-2.2Meg	AVC Network
R4	2.2Meg	½	504522	BTS-2.2Meg	RF Amplifier Grid
R5	68Ω	½	503068		RF Amplifier Cathode
R6	100KΩ	½	503410	BTS-100K	RF Amplifier Screen
R7	8200Ω	½	503282	BTS-8200	RF Amplifier Plate Load
R8	560Ω	½	503156	BTS-560	AM-RF Coil Shunt
R9	390Ω	½	503139	BTS-390	Parasitic Suppressor
R10	680Ω	½	503168	BTS-680	Decoupling
R11	3.9Meg	½	503539	BTS-3.9Meg	Mixer Grid
R12	18KΩ	½	503318	BTS-18K	Oscillator Grid
R13	33KΩ	1	513333	BTA-33K	Oscillator Plate Load
R14	120KΩ	½	503412	BTS-120K	Mixer Decoupling
R15	1200Ω	½	503212	BTS-1200	AVC Network
R16	68Ω	½	503068		1st. IF Amplifier Cathode
R17	22KΩ	½	503322	BTS-22K	1st. IF Amplifier Screen
R18	680Ω	½	503168	BTS-680	1st. IF Amplifier Decoupling
R19	100KΩ	½	503410	BTS-100K	Diode RF Filter
R20	390KΩ	½	503439	BTS-390K	Diode Load
R21	120Ω	½	503112	BTS-120	2nd. IF Amplifier Cathode
R22	22KΩ	½	503322	BTS-22K	2nd. IF Amplifier Screen
R23	680Ω	½	503168	BTS-680	2nd. IF Amplifier Decoupling
R24	100Ω	½	503110	BTS-100	Balancing
R25	15KΩ	½	503315	BTS-15K	De-emphasis
R26	3300Ω	½	503233	BTS-3300	Balancing
R27	1200Ω	½	503212	BTS-1200	Balancing
R28	39KΩ	½	503339	BTS-39K	Ratio Detector Diode Load
R29	470KΩ	½	504447	BTS-470K	AVC Network
R30	22Meg	½	504622	BTS-22Meg	AVC Network
R31	560KΩ	½	503456	BTS-560K	Tone Compensation
R32	15KΩ	½	503315	BTS-15K	Tone Compensation
R33	27KΩ	½	503327	BTS-27K	Tone Compensation
R34	10Meg	½	504610	BTS-10Meg	AF Grid
R35	330KΩ	½	503433	BTS-330K	AF Plate Load
R36	100KΩ	½	503410	BTS-100K	AF Plate Decoupling
R37	470KΩ	½	504447	BTS-470K	Output Grid
R38	330Ω	1	513133	BTA-330	Output Cathode
R39	1200Ω	4	76346	1 3/4A-1200	Filter

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	RCA VICTOR PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @.62A	510VCT @.070A	5VAC @2.0A	6.3VAC @ 3.0A	76326	PM 8403	P-3051	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		RCA VICTOR PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	8KΩ	3.9Ω	370Ω tapped @ 10Ω	.8Ω	76327	A-3849②	A-3032①	RO-13①②	① Drill One New Mounting Hole ② Add extra filter to reduce hum level.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	RCA VICTOR PART No.	VIKING PART No.	QUAM PART No.	
SP1A	P.M.	3.9Ω	92586-5W	8J9	8A21	
B			92586-6W			Alternate Speaker
C			92586-7W			Alternate Speaker
	CONE DIA.	V. C. DIA.				
SP2	7 1/4"	9/16"				

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

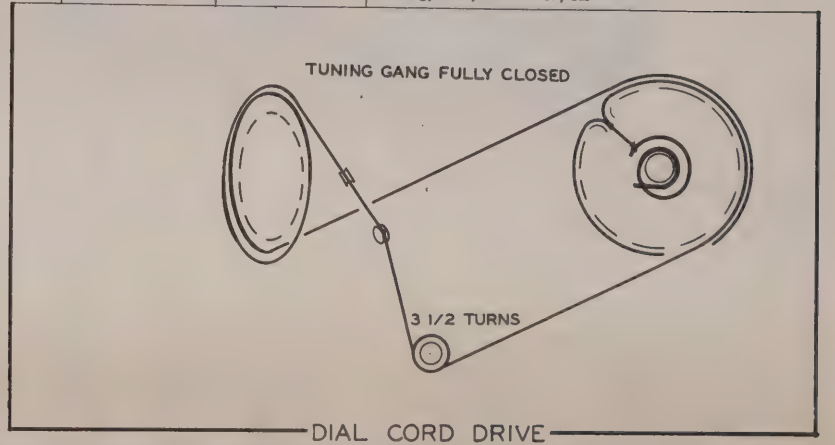
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	RCA VICTOR PART No.	MERIT PART No.	
L1	FM Ant. Coil	0Ω		76354		
L2	FM RF Coil	0Ω		76353		
L3	AM Loop Ant.	.2Ω		76343		
L4	AM RF Coil	2Ω	4.7	76338		Tap at 1.7Ω
L5	AM Osc. Coil	2.2Ω	5.6Ω	76337	BC-397	
L6	FM Osc. Coil	0Ω		76352		
L7	Fil. Choke	.4Ω		76351		
L8	Fil. Choke	.4Ω		76351		
L9	1st. FM IF	.3Ω	.3Ω	75559	FM-254	
L10	1st. AM IF	6.5Ω	6.5Ω	76335	BC-352	
L11	Fil. Choke	.2Ω		71942		
L12	2nd. FM IF	1.4Ω	.5Ω	76329	FM-254	
L13	2nd. AM IF	7.5Ω	7.5Ω	76328	BC-352	
L14	Ratio Det. Trans.	1Ω	.2Ω	73743	FM-252	Tap at .1Ω
L15	Line Choke	.1Ω				

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					RCA VICTOR PART No.		
M1	Bayonet	6-8	.25	Blue	11891		Type Number TS-44
M2	Bayonet	6-8	.25	Blue	11891		Type Number TS-44

MISCELLANEOUS

ITEM No.	PART NAME	RCA VICTOR PART No.	NOTES
M3	Switch		Function Selector
M4	3 Gang Var. Cap.	76333	(22-337MMF, 19-244MMF, 21-167MMF)
	Cabinet	Y2328	
	Dial	76356	
	Pointer	76362	
	Knob	74711	Function Switch
	Knob	73378	Tuning, tone, volume On/Off



PHOTOFACT* Folder

RCA
MODEL 7T111B (Ch. KCS47GF-2)

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

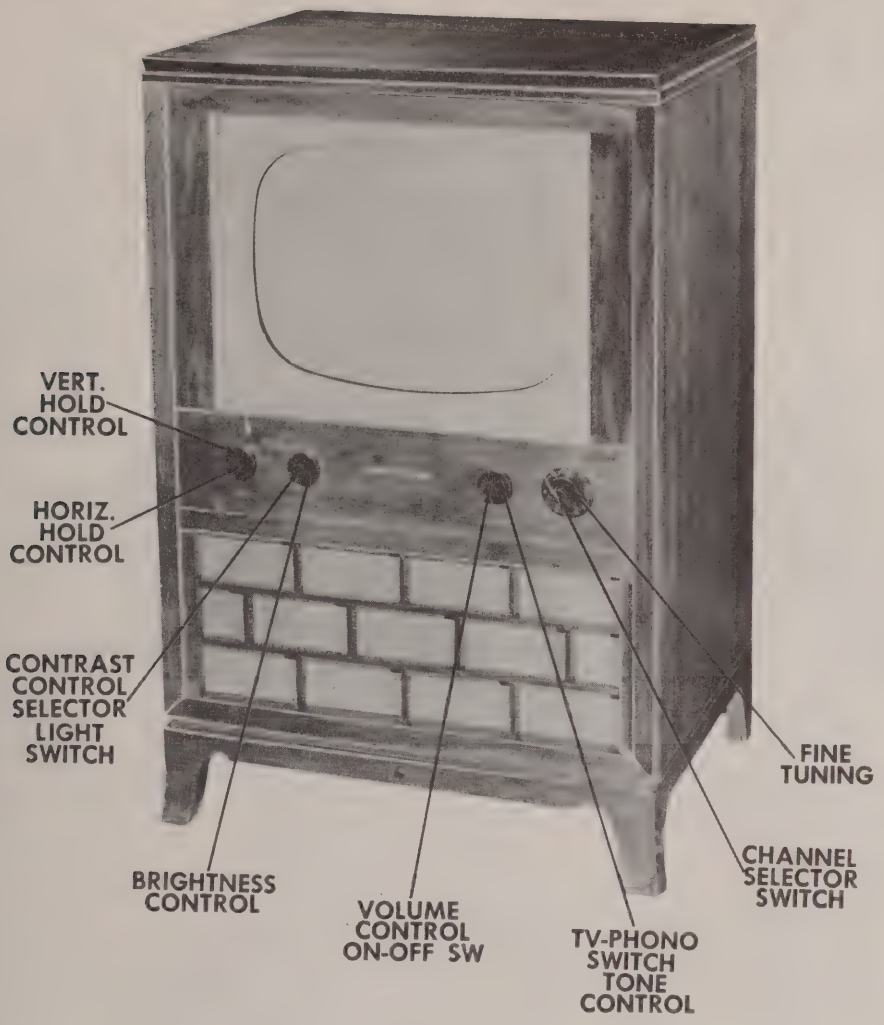
MODEL 71T111B

RCA
MODEL 7T111B (Ch. KCS47GF-2)

HOWARD W. SAMS & CO., INC. • Indianapolis, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1952 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 1-52 SET 156 FOLDER 11



RCA
MODEL 7T111B (Ch. KCS47GF-2)

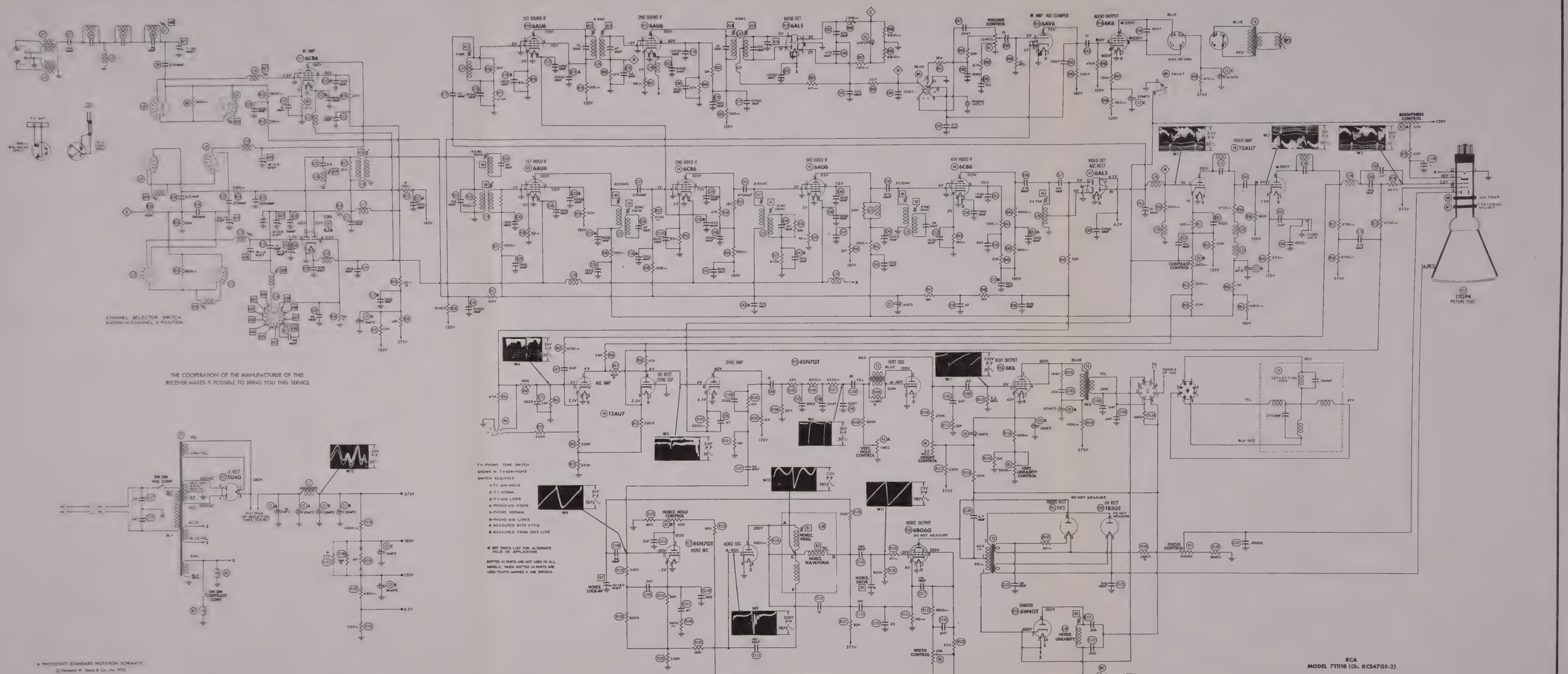
TRADE NAME	RCA Model 7T111B (Ch. KCS47GF-2)
MANUFACTURER	RCA Victor Div., Radio Corp. Of America, Camden, N. J.
TYPE SET	Television Receiver
TUBES	Twenty Three
POWER SUPPLY	110-120 Volts AC-60 Cycle — Rating 1.5 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13

INDEX

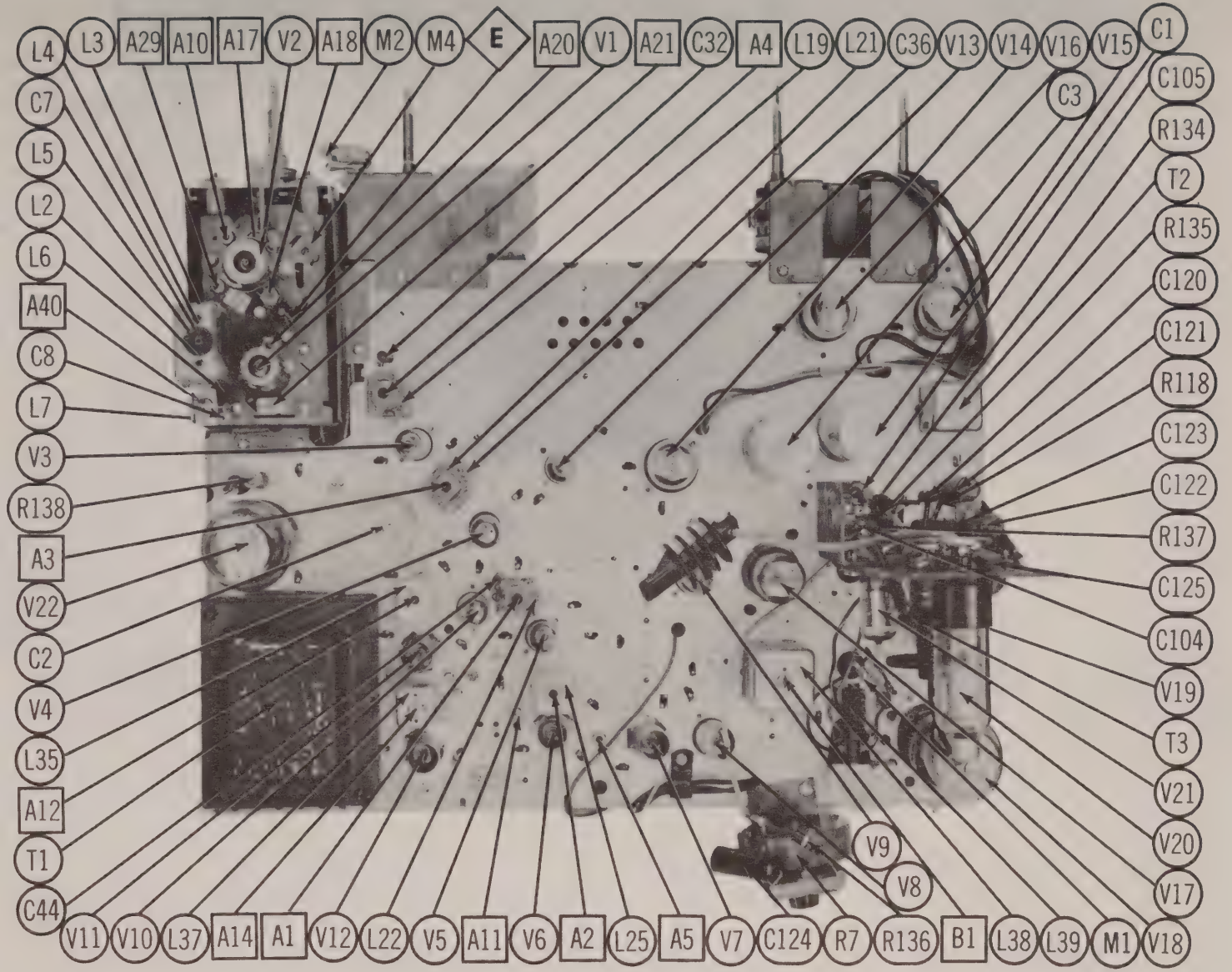
Alignment Instructions 6, 7
Disassembly Instructions 10
Horizontal Sweep Circuit Adjustments 10
Parts List and Description ..... 11 thru 14
Photographs
Cabinet - Rear View 10
Capacitor and Alignment Identification 4, 9
Photographs (cont.)
Chassis - Top View 3
RF Tuner 8
Resistor and Inductor Identification 15, 16
Resistance Measurements 8
Schematic 2
Tube Placement Charts 5

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

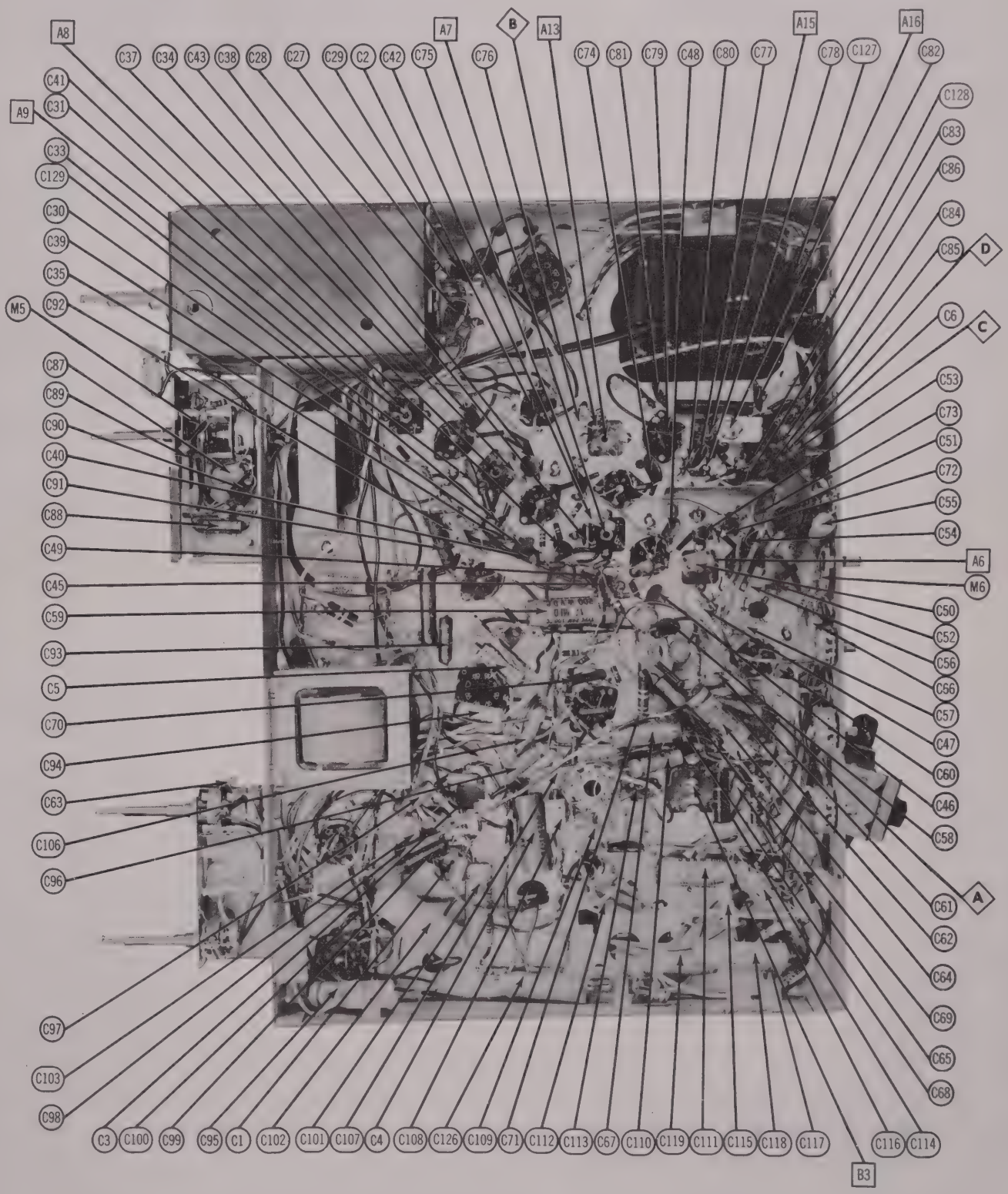
"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1952 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America


RF AMP V6 6CB6
1ST SOUND IF V10 6AU6
2ND SOUND IF V11 6AU6
RATIO DET V12 6AL5
VOLUME CONTROL
AF AMP AGC CLAMPER V13 6AV6
AUDIO OUTPUT V14 6K6
1ST VIDEO IF V5 6AU6
2ND VIDEO IF V4 6CB6
3RD VIDEO IF V7 6AU6
4TH VIDEO IF V8 6CB6
VIDEO DET AGC RECT V9 6AL5
VIDEO AMP V10 12AU7
BRIGHTNESS CONTROL
CONTRAST CONTROL
ION TRAP
CENTERING MAGNET
V12 17GP4 PICTURE TUBE
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 2 POSITION
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
SYNC AMP V10 6SN7GT
AGC AMP V10 12AU7
DC REST SYNC SEP
VERT OSC V9 6SN7GT
VERT OUTPUT V11 6K6
VERT HOLD CONTROL
VERT HEIGHT CONTROL
VERT LINEARITY CONTROL
HORIZ MULT V12 6SN7GT HORIZ AFC
HORIZ OSC
HORIZ MOLD CONTROL
HORIZ LOCK-IN
HORIZ FREQ.
HORIZ WAVEFORM
HORIZ OUTPUT V13 6BG6G DO NOT MEASURE
HORIZ DRIVE
WIDTH CONTROL
FOCUS RECT V10 1V2
DO NOT MEASURE
HV RECT V13 5U4G
SW ON VOL CONT
SW ON CONTRAST CONT
POWER TRANSFORMER YOKE SOCKET
DEFLECTION YOKE
TO TOP OF V12
TV-PHONO TONE SWITCH SHOWN IN TV MIN-HIGHS
SWITCH SEQUENCE
1-TV MIN HIGHS
2-TV NORMAL
3-TV MIN LOWS
4-PHONO MIN HIGHS
5-PHONO NORMAL
6-PHONO MIN LOWS
▲ MEASURED WITH VTVM
■ MEASURED FROM 120V LINE
⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1952
RCA
MODEL 7T111B (Ch. KCS47GF-2)

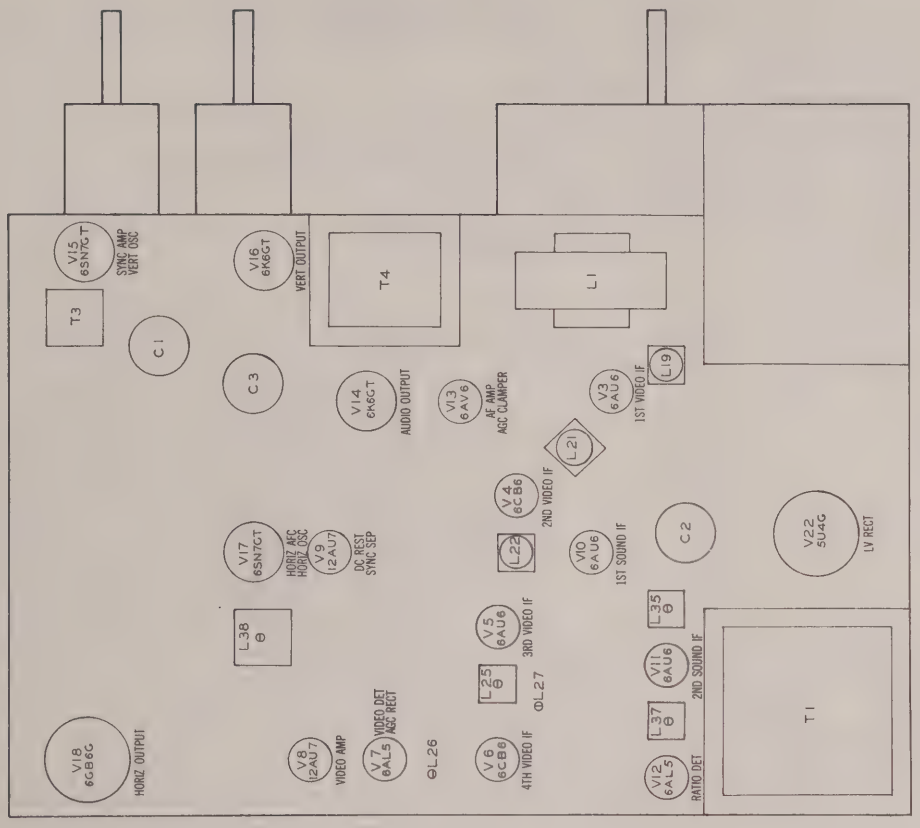
RCA
MODEL 7T111B (Ch. KCS47GF-2)

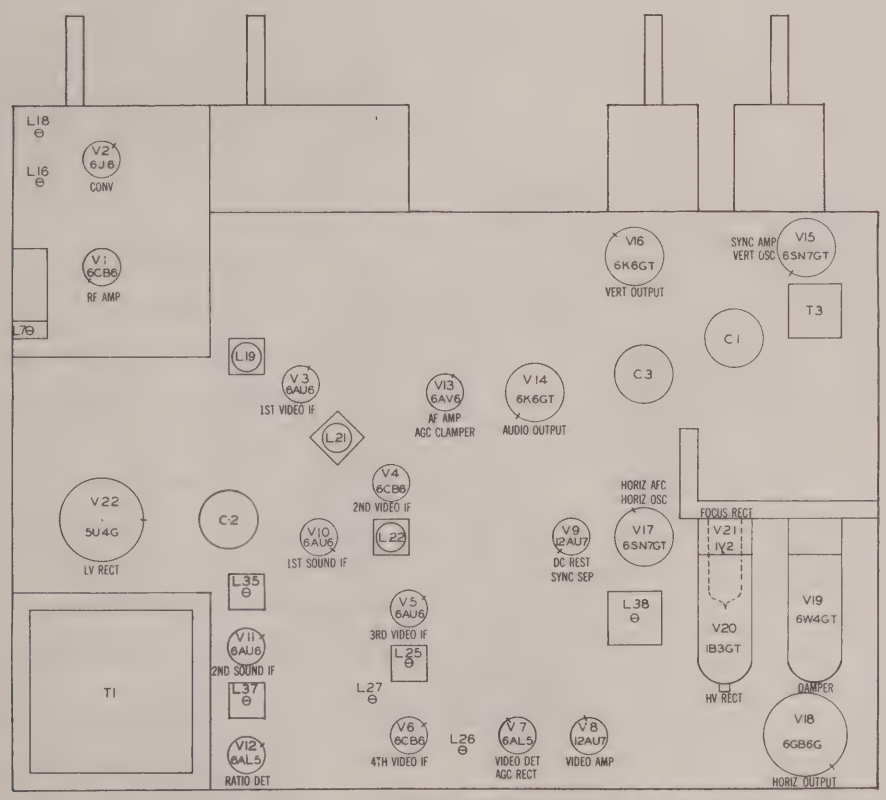


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW- CAPACITOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage
Do not operate the set without the focus and deflection assembly connected.

VIDEO IF ALIGNMENT

Remove the converter tube, (V2) and replace it with a 6J6 which has Pin 1 removed, this will disable the local oscillator and prevent the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded lead of C5, connect the positive lead to chassis.
Connect the syncronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	Not used	21MC	Any	Use VTVM DC probe to Point (A). Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	"	27MC	"	"	A2, A3	Adjust for MINIMUM deflection
3.	"	"	"	19.5MC	"	"	A4	Adjust for MINIMUM deflection.
4.	"	"	"	23.7MC	"	"	A5	Adjust for maximum deflection.
5.	"	"	"	25.35MC	"	"	A6	Adjust for maximum deflection.
6.	"	"	"	21.95MC	"	"	A7	Adjust for maximum deflection
7.	"	"	"	22.53MC	"	"	A8	Adjust for maximum deflection
8.	"	"	24MC (10MC Swp.)	22.2MC 25.4MC	"	Vert. amp. to Point (A). Low side to chassis.	A9, A10	Connect 330Ω resistors across R31, R33 L23 and R45. Adjust for response curve similar to Fig. 1.
9.	"	"	"	21.85MC 24.75MC 25.5MC 26.25MC	"	"		Remove the 330Ω resistors. Check for response curve similar to Fig. 2 If necessary retouch A5 thru A8 for proper response.

SOUND IF ALIGNMENT

Connect the oscilloscope across the speaker voice coil to use as an output indicator.
Turn the trimmer, (A16), to minimum capacity.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	.01MFD.	High side to Point (A). Low side to chassis.	4.5MC (400% Mod.)	Any	DC probe to Point (B). Common to chassis.	A11, A12 A13	Adjust for maximum deflection on VTVM.
11.	"	"	"	"	DC probe to Point (C). Common to chassis.	A14	Adjust for maximum deflection on VTVM. Adjust generator output until VTVM reads 10 Volts.
12.	"	"	"	"	"	A15	Adjust for MINIMUM 400% indication on scope connected across speaker voice coil.
13.	"	"	"	"	DC probe to Point (D). Common to chassis.	A16	If VTVM at Point (D) reads more than ± 1.5 volts, adjust A16 for zero reading between positive and negative peaks on the VTVM. Repeat adjustment of A15 and A16 until voltage at Point (C) is less than ± 1.5 volts with A15 adjusted for minimum indication on scope. Recheck the voltage at Point (C). When proper alignment is reached the voltage at Point C should be 10V, the voltage at Point (D) should be less than ± 1.5V, and these should occur with A15 adjusted for MINIMUM 400% indication on scope.

RF TUNER ALIGNMENT

Remove the dummy convertter tube and replace the original 6J6 in its socket.
Disconnect the coaxial link from terminal 2 of the tuner terminal strip and connect a 39Ω carbon resistor between terminals 1 and 2 of the terminal strip. Loosely connect the link to terminal 2 of the terminal strip.
Connect the negative lead of a 3.5 Volt supply from a battery to terminal 3 of the RF unit terminal board, connect the positive lead to chassis.
Detune A10 by turning the core completely out of the coil.
In early production models where L16 is adjustable turn its core (A30) completely out of the coil.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC swp.)	211.25MC 215.75MC	13	Vert. amp. to Point (A). Low side to chassis.	A17	Adjust to place markers as shown in Fig. 3.
15.	"	"	183MC (10MC swp.)	181.25MC 185.75MC	8	Vert. amp. to Point (E). Low side to chassis.	A18, A19, A20, A21	Adjust for response curve similar to Fig. 4.
16.	"	"	85MC (10MC swp.)	83.25MC 87.75MC	6	Vert. amp. to Point (A). Low side to chassis	A22	Adjust to place markers as shown in Fig. 3.
17.	"	"	"	"	"	Vert. amp. to Point (E). Low side to chassis.	A23, A24, A25	Adjust for response curve similar to Fig. 3.
18.	"	"	"	"	"	USE VTVM DC probe to Point (E). Common to chassis.	A26	Adjust for -3 volt reading on VTVM.
19.	"	"	"	"	"	Vert. amp. to Point (E) Low side to chassis.		Check for response similar to Fig. 3. If necessary retouch A23, A24 and A25 for proper response. Recheck voltage at Point (E). Repeat adjustments of A23, A24, A25 and A26 until proper response is obtained with -3V at Point (E).
20.		"	183MC (10MC swp.)	181.25MC 185.75MC	8	"		Readjust A18, A20 and A21 for proper response. Readjust A19 only if necessary.

FIG. 1

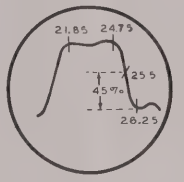


FIG. 2

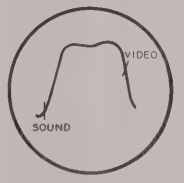
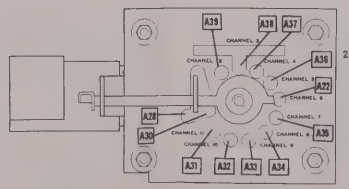


FIG. 3

FIG. 4



OSCILLATOR ALIGNMENT POINTS

ALIGNMENT INSTRUCTIONS (CONT.)

21.	"	"	213MC (10MC swp.)	211.25MC 215.75MC	13	Vert. amp. to Point (A). Low side to chassis.	A27, A21	Adjust for maximum amplitude of response between the markers. Then overshoot the adjustment by turning the screw a little farther than necessary to obtain maximum amplitude between the markers. Adjust A21 for maximum amplitude.
22.	"	"	85MC (10MC swp.)	83.25MC 87.75MC	6	Vert. amp. to Point (A). Low side to chassis.	A22	Adjust to place markers as shown in Fig. 3.
23.	"	"	"	"	"	Vert. amp. to Point (E). Low side to chassis.		Check for response curve similar to Fig. 4. If necessary adjust A23, A24 and A25 for proper response. It should not be necessary to retouch A19. Check the voltage at Point (E). If necessary retouch A26 for -3 Volts. If A26 is adjusted, switch to channel 6 and adjust A18 for proper curve shape. Then recheck channel 8.
24.	"	"	79MC (10MC swp.)	77.25MC 81.75MC	5	Vert. amp. to Point (E). Low side to chassis.		Check for proper response curve shape and oscillator injection voltage, (-3 volts at Point (E).)
			69MC (10MC swp.)	67.25MC 71.75MC	4			
			63MC (10MC swp.)	61.25MC 65.75MC	3			
			57MC (10MC swp.)	55.25MC 59.75MC	2			
			177MC (10MC swp.)	175.25MC 179.75MC	7			
			183MC (10MC swp.)	181.25MC 185.75MC	8			
			189MC (10MC swp.)	187.25MC 191.75MC	9			
			195MC (10MC swp.)	193.25MC 197.75MC	10			
			201MC (10MC swp.)	199.25MC 203.75MC	11			
			207MC 10MC swp.)	205.25MC 209.75MC	12			
			213MC (10MC swp.)	211.25MC 215.75MC	13			
25.	"	"	"	"	"	Vert. amp. to Point (A). Low side to chassis.	A28, A17	Adjust A28 to place markers as shown in Fig. 3. Then overshoot the adjustment by turning the screw a little farther than necessary. Adjust A17 to reset oscillator to proper frequency.
26.	"	"	177MC (10MC swp.)	175.25MC 179.75MC	7	Vert. amp. to Point (E). Low side to chassis.		Check for response curve similar to Fig. 4. If markers fall below 80% on any channel switch to channel 8 and adjust A18, A19, A20 and A21 as needed for proper response. If A21 is adjusted the adjustment should be overshot a small amount and compensated for by readjusting A27. If the valley in the top of the curves appears excessively deep they may be flattened by adjusting A29. Check for undesirable "suckouts" on channels 7 & 8. In later productions A29 may be fixed and not require adjustment.
			183MC (10MC swp.)	181.25MC 185.75MC	8			
			189MC (10MC swp.)	187.25MC 191.75MC	9			
			195MC (10MC swp.)	193.25MC 197.75MC	10			
			201MC (10MC swp.)	199.25MC 203.75MC	11			
			207MC (10MC swp.)	205.25MC 209.75MC	12			
			213MC (10MC swp.)	211.25MC 215.75MC	13			
27.	"	"	183MC (10MC swp)	181.25MC 185.75MC	8	Vert. amp. to Point (A). Low side to chassis.		Check for proper oscillator frequency on channel 8. If necessary overshoot adjustment of A22 and compensate for it by readjusting A17.
28.	"	"	213MC (10MCSwp)	211.25MC 215.75MC	13	Vert. Amp to point (A). Low side to chassis.	A17	Adjust to place markers as shown in fig. 3 It should be possible to properly place the marker with the fine tuning control within the center 1/3 of its range.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A30	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A31	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A32	
			189 MC (10MC Swp)	187.25MC 191.75MC	9		A33	
			183MC (10MCSwp)	181.25MC 185.75MC	8		A34	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A35	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A22	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A36	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A37	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A38	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A39	
29.	Repeat steps 10 and 11 of VIDEO IF ALIGNMENT							

FM TRAP ADJUSTMENT

If interference from an FM station is encountered, adjust A40 to eliminate or minimize the interference.

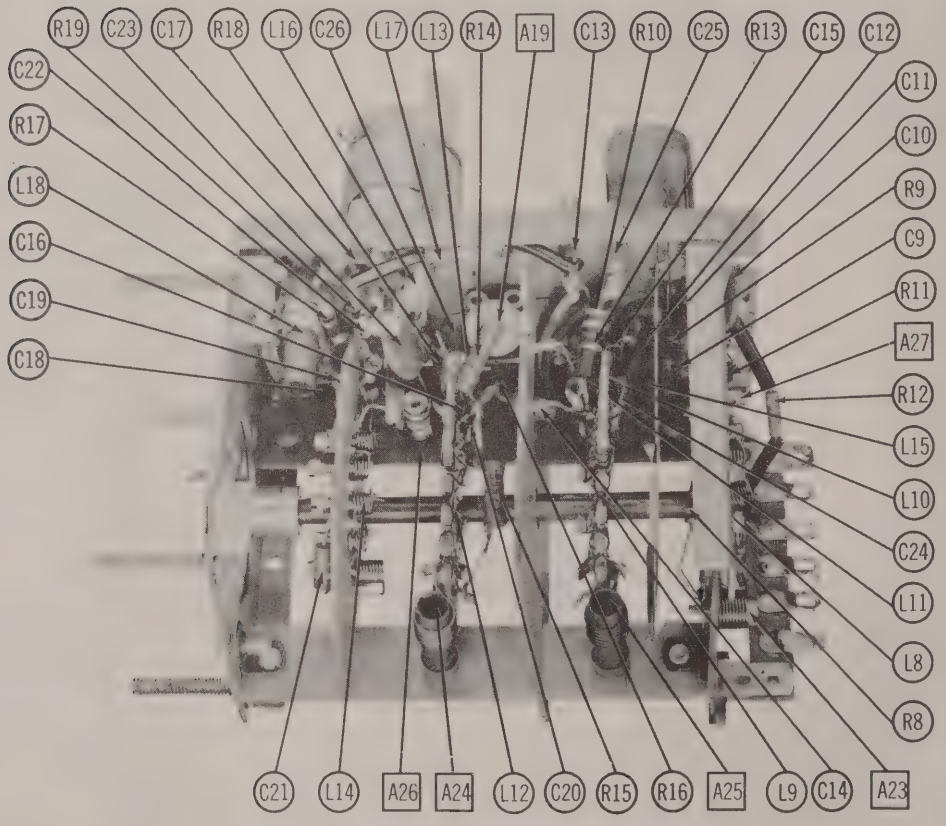
RCA
MODEL 7T111B (Ch. KCS47GF-2)

RESISTANCE MEASUREMENTS

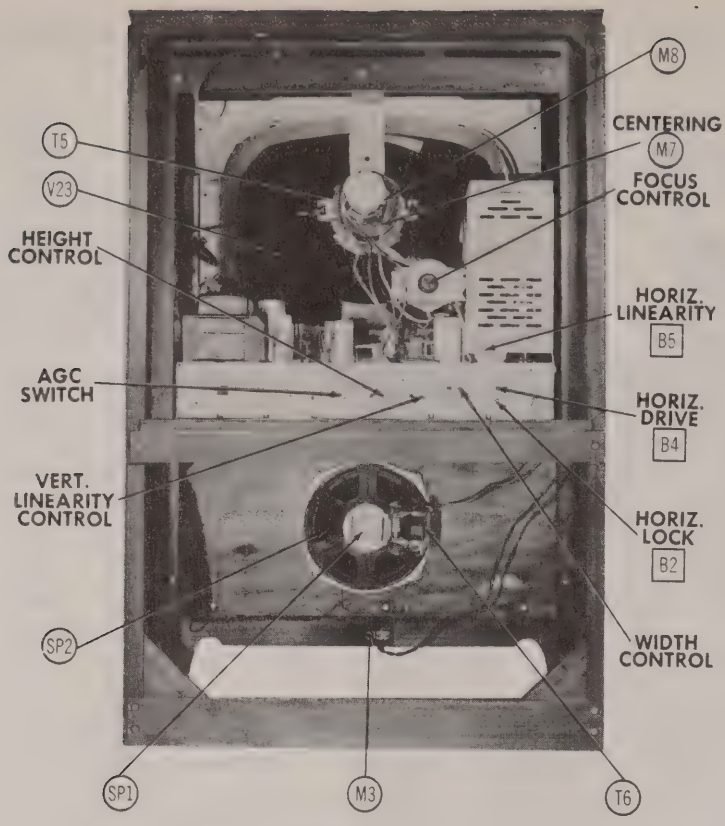
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	350KΩ	27Ω	0Ω	.1Ω	†7.4KΩ	†30KΩ	0Ω		
V 2	6J6	†16KΩ	†10KΩ	9Ω	.1Ω	100KΩ	100KΩ	0Ω		
V 3	6AU6	200KΩ	0Ω	0Ω	.1Ω	†11.8KΩ	†37KΩ	82Ω		
V 4	6CB6	200KΩ	82Ω	.1Ω	0Ω	†16KΩ	†52KΩ	0Ω		
V 5	6AU6	200KΩ	0Ω	0Ω	.1Ω	†11.8Ω	†37KΩ	82Ω		
V 6	6CB6	.1Ω	180Ω	.1Ω	0Ω	†11KΩ	†38KΩ	0Ω		
V 7	6AL5	.1Ω	200KΩ	0Ω	.1Ω	220Ω	0Ω	5.6KΩ		
V 8	12AU7	†30KΩ	5.6KΩ	3KΩ	.1Ω	.1Ω	†7.5KΩ	■560KΩ	■220Ω	0Ω
V 9	12AU7	†50KΩ	56KΩ	440KΩ	.1Ω	.1Ω	†45KΩ	0Ω	440KΩ	0Ω
V 10	6AU6	470KΩ	0Ω	0Ω	.1Ω	■1KΩ	■1KΩ	82Ω		
V 11	6AU6	47KΩ	0Ω	0Ω	.1Ω	■1KΩ	■10KΩ	68Ω		
V 12	6AL5	INF	INF	.1Ω	0Ω	7.8KΩ	0Ω	7.8KΩ		
V 13	6AV6	10Meg	0Ω	.1Ω	0Ω	350KΩ	350KΩ	†330KΩ		
V 14	6K6GT	■390Ω	.1Ω	†885Ω	†505Ω	■470KΩ	INF	0Ω	■500Ω	
V 15	6SN7GT	1.1Meg	#13Meg	0Ω	40KΩ	■9KΩ	2.2KΩ	.1Ω	0Ω	
V 16	6K6GT	INF	0Ω	†1.4KΩ	†1.4KΩ	2.2Meg	1.3KΩ	.1Ω	2.6KΩ	
V 17	6SN7GT	1.4Meg	†50KΩ	410KΩ	480KΩ	†82KΩ	0Ω	0Ω	.1Ω	
V 18	6BG6G	†45Ω	.1Ω	100Ω	INF	820KΩ	3.9KΩ	0Ω	†6KΩ	TOP CAP #26Ω
V 19	6W4GT	INF	INF	330KΩ	INF	†85Ω	INF	#0Ω	#.2Ω	
V 20	1B3GT	PINS 1 thru 8 HAVE INF RESISTANCE								TOP CAP #250Ω
V 21	1V2	PINS 1 thru 8 HAVE INF RESISTANCE								#26Ω
V 22	5U4G	INF	11KΩ	INF	25Ω	INF	24Ω	INF	11KΩ	
V 23	17GP4	0Ω	1.2Meg	PIN 10 †45Ω	PIN 11 ■160KΩ	Pin 12 .1Ω	20Meg			

ALL MEASUREMENTS TAKEN IN TV POSITION
AGC SWITCH FULLY COUNTER CLOCKWISE
† MEASURED FROM PIN 8 OF V22
# MEASURED FROM PIN 3 OF V19
■ MEASURED FROM 120 VDC LINE



RF TUNER-RIGHT SIDE



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL OSCILLATOR ALIGNMENT

Connect a short between terminals C and D of L28.
Turn the set on and tune in a TV station, preferably a test pattern, and synchronize the picture if possible.
Turn the horizontal hold control to fully clockwise. Adjust the horizontal frequency slug, (B1) until the picture is out of synchronization and the blanking signal appears in the picture as a single vertical bar.
Turn the hold control approximately 1/4 turn counter clockwise to synchronize the picture and examine the picture width and horizontal linearity. If necessary adjust the drive , width and linearity controls as outlined under DRIVE, WIDTH, AND LINEARITY ADJUSTMENTS, until the picture is correct. If any of these controls require adjustment, repeat the adjustment of B1.
Turn the hold control to fully counter-clockwise. The picture may remain in synchronization. If so, momentarily interrupt the signal by switching to another channel and back again.
Slowly turn the hold control clockwise and carefully note the least number of sloping bars present before the picture synchronizes horizontally. If more than nine bars are present adjust the locking range trimmer, (B2), slightly clockwise. If less than seven bars are present adjust B2 slightly counter-clockwise.
Turn the hold control to fully counter-clockwise and interrupt the signal and recheck the pull in range. Repeat the check and adjustment of B2 until the correct number of bars are present at the pull in point.
Remove the short from L28.
Turn the horizontal hold control to fully clockwise and adjust the waveform slug, (B3), until the blanking signal again appears in the picture as a single vertical bar.
Connect a low capacity probe of an oscilloscope to terminal of L28.
Turn the hold control approximately 1/4 turn counter-clockwise to synchronize the picture.
Adjust B3 until the broad and narrow peaks of the waveform on the scope are of equal height as shown in figure 5. If necessary during adjustment of B3, adjust B1 to keep the picture synchronized.
Remove the oscilloscope and turn the hold control to fully counter-clockwise. Momentarily interrupt the signal by switching to another channel and back again.
Slowly turn the hold control clockwise and carefully note the least number of sloping bars present just before the picture synchronizes. If more than two bars are present adjust B2 slightly clockwise, if less than two bars are present adjust B2 slightlt counter-clockwise.
Turn the hold control to fully clockwise. The picture should be out of synchronization and show one vertical bar, if not, retouch B1 to obtain this condition.

HORIZONTAL DRIVE, WIDTH, AND LINEARITY ADJUSTMENTS

Adjust the horizontal drive trimmer, (B4), counter clockwise as far as possible without stretching the left side of the picture.
Turn the horizontal linearity slug, (B5), out until a noticeable reduction in width occurs then in until nearly maximum width with best horizontal linearity is obtained.
Adjust the width control until the picture is slightly wider than necessary to fill the mask horizontally.

AGC ADJUSTMENT

In normally strong signal areas the AGC switch should be set to position 1, (counter-clockwise). If interference of the impulse type is encountered switch to position 2, (center). In weak signal areas switch to position 3, (clockwise).

DISASSEMBLY INSTRUCTIONS

1. Remove eight control knobs from front panel.
2. Disconnect built-in antenna.
3. Remove three screws holding back cover.
4. Disconnect Jewel light.
5. Disconnect speaker plug from speaker.
6. Disconnect H. V. lead from picture tube.
7. Remove four nuts holding speaker in cabinet. Remove speaker.
8. Disconnect picture tube socket.
9. Disconnect H.V. ground strap from top of H. V. compartment.
10. Disconnect A.C. plug from side of H. V. compartment.
11. Remove four bolts holding chassis in cabinet. Remove chassis.

Note: For picture tube removal it is necessary to remove chassis as outlined above.

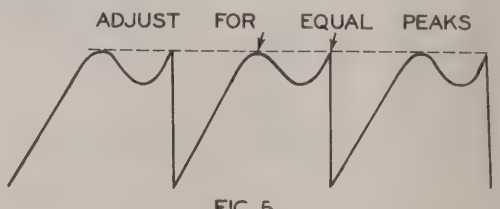


FIG. 5

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		RCA PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	6CB6	6CB6	7CM	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd. Video IF Amp	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp	6AU6	6AU6	7BK	
V6	4th. Video IF Amp.	6CB6	6CB6	7CM	
V7	Video Det.-AGC-Rect.	6AL5	6AL5	6BT	
V8	Video Amp.	12AU7	12AU7	9A	
V9	DC Restorer-Sync. Sep.	12AU7	12AU7	9A	
V10	1st. Sound IF Amp.	6AU6	6AU6	7BK	
V11	2nd. Sound IF Amp.	6AU6	6AU6	7BK	
V12	Ratio Det.	6AL5	6AL5	6BT	
V13	AF Amp.-AGC. Clamper	6AV6	6AV6	7BT	
V14	Audio Output	6K6GT	6K6GT	7S	
V15	Sync. Amp.-Vert. Blocking Osc.	6SN7GT	6SN7GT	8BD	
V16	Vert. Output	6K6GT	6K6GT	7S	
V17	Horiz. AFC-Horiz. Osc.	6SN7GT	6SN7GT	8BD	
V18	Horiz. Output	6BG6G	6BG6G	5BT	
V19	Damper	6W4GT	6W4GT	4CG	
V20	H.V. Rect.	1B3GT	1B3GT	3C	
V21	Focus Rect.	1V2	1V2	9U	
V22	L.V. Rect.	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA			RTMA BASE TYPE	NOTES
	RCA PART No.	SYLVANIA PART No.	THOMAS PART No.		
V23	17GP4			126	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	RCA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	35	450	75510	AFH 4-16		UPT420		TVL-3785	▲Filter
B	35	450						TVA-1702	■Filter
C	10	450							▲Audio Output Dec. Decoupling
D	5	450							
C2A	35	450	75510	AFH 4-16		UPT420		TVL-3785	▲Filter
B	35	450						TVA-1702	■Filter
C	10	450							▲Decoupling Decoupling
D	5	450							
C3A	20	450	75511	AFH 4-108		UPT421		TVL-4701	▲Vert. Output Dec.
B	80	200							■Decoupling
C	20	200							▲Audio Output Cathode Vert. Output Cathode
D	50	50							
C4	5	450	28417	PRS450/4		BR445		TVA-1702	Vert. Osc. Dec.
C5	2	50	73747	PRS150/4		BBR-50		TVA-1301	AGC Filter
C6	5	50	74521	PRS150/4		BR550		TVA-1303	Stabilizing Cap.
C7	100		75437	SI100	D6-101		GP1K-101	5GA-T1	RF Coupling
C8	39		75450		TCZ-39		NP0K-390		Fixed Trimmer
C9	270		75199	SI270	D6-271		GP2K-271	5GA-T27	RF Coupling
C10	5000		73473	BPD-005	DD-502		811-005	5HK-D5	AGC Filter
C11	12		75200	SI12	D6-120		GP1K-120		RF Amp. Cathode
C12A	1500		75089	BPD-2X0015	DD-2-152		812-0015	5HK-2D15	RF Amp. Screen
B	1500								RF Amp. Filament
C13	1500		75166	SI1500	D6-152		GP2L-152	501C1	RF Bypass
C14	270		75199	SI270	D6-271		GP2K-271	5GA-T27	RF Coupling
C15	270		75199	SI270	D6-271		GP2K-271	5GA-T27	RF Coupling
C16	390		75641	SI390	D6-391		GP2K-391		RF Coupling
C17	1500		75166	SI1500	D6-152		GP2L-152	501C1	RF Bypass
C18	4		75289				NP0K-040		Fixed Trimmer
C19	15		45465		TCZ-15		NP0K-150	5TCC-Q15	Osc. Feedback
C20	39		75196				N330K-390		Osc. Grid Cap.
C21	.68		71504		TCZ-.68		NP0K-R68		Fixed Trimmer
C22	6.8		75197	SI6.8NP0	TCZ-6.8		NP0K-6R8		Fixed Trimmer
C23	1500		73748	BPD-0015	DD-152		8D1-0015	5HK-D15	Conv. Fil.
C24	1500		75166	SI1500	D6-152		GP2L-152	501C1	Fil. Bypass
C25	1500		75166	SI1500	D6-152		GP2L-152	501C1	RF Bypass
C26	.8-3.8		75184		829-4				Variable Trimmer
C27A	1500		75089	BPD-2X0015	DD-2-152	1W5D15	812-0015	5HK-2D15	RF Bypass
B	1500					1W5D15			RF Bypass
C28	10000		73960	BPD-01	DD-103	1D3S1		5HK-S1	AGC Filter
C29	1500		73748	BPD-0015	DD-152	1W5D15		5HK-2D15	AGC Filter
C30	1500		73748	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	AGC Filter
C31	56		71924		TCN-56		N750L-560		Fixed trimmer
C32	82				TCZ-82		NP0L-820		Fixed Trimmer
C33A	10000		75877	BPD-01	DD-3-103	1D3S1	821-01	5HK-S1	1st. Video IF Plate
B	10000			BPD-01		1D3S1	821-01	5HK-S1	1st. Video IF Screen
C34	1500		73748	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	1st. Video IF Fil.
C35	1500		73748	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	RF Bypass
C36	47								Fixed Trimmer
C37	270	500	73091	1468-0003	D6-271	5W5T3	GP2K-271	MS-33	IF Coupling
C38A	1500		75089	BPD-2X0015	DD-2-152	1W5D15	812-0015	5HK-2D15	AGC Filter
B	1500					1W5D15			2nd. Video IF Fil.
C39	10000		73960	BPD-01	DD-103	1D3S1	821-01	5HK-S1	2nd. Video IF Screen
C40	10000		73960	BPD-01	DD-103	1D3S1	821-01	5HK-S1	RF Bypass
C41	1500		73748	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	RF Bypass
C42	270	500	73091	1468-0003	D6-271	5W5T3	GP2K-271	MS-33	IF Coupling
C43A	1500		75089	BPD-2X0015	DD-2-152	1W5D15	812-0015	5HK-2D15	AGC Filter
B	1500					1W5D15			IF Trap Bypass

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA RCA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C44	47			S147NP0	TCZ-47		NP0K-470	5TCC-Q47	Fixed Trimmer
C45	10000		73960	BPD-01	DD-103	1D3S1	821-01	5HK-S1	3rd. Video IF Plate
C46	1500		73748	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	3rd. Video IF Screen
C47	.1	400	73551	P488-1	DF-104	PTF4P1		4TM-P1	3rd. Video IF Screen
C48	5000		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd. Video IF Fil.
C49	1500		73748	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	RF Bypass
C50	270	500	73091	1468-0003	D6-271	5W5T3	GP2K-271	MS-33	IF Coupling
C51A	1500		75089	BPD-2X0015	DD-2-152	1W5D15	812-0015	5HK-2D15	RF Bypass
B	2500					1W5D15			RF Bypass
C52	1500		73748	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	4th Video IF Screen
C53	1500		73748	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	4th Video IF Cathode
C54	1500		73748	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	4th Video IF Fil.
C55	.047	400	75071	P488-047	DF-503	PTE4S5		4TM-S5	RF Bypass
C56	270	500	73091	1468-0003	D6-271	5W5T3	GP2K-271	MS-33	IF Coupling
C57	100		45233	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	IF Coupling
C58	1500		73748	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	AGC Filter
C59	47	200	73787	P288-47		GT2P5		2TM-P47	AGC Filter
C60	[illegible]		73960	BPD-01	DD-103	1D3S1	821-01	5HK-S1	AGC Rect. Cathode
C61	10		53511	SI10	D6-100	5W5Q1	GP1K-100	5GA-Q1	Video Det. Filter
C62	.0033	600	73595	P688-0022	D6-222	PTE6D2	GP2-333-222	6TM-D22	Video Amp. Cathode
C63	100		45233	SI100N750	TCN-100		N750L-101	5TCU-T1	Contrast Cont. Shunt
C64	.1	400	73551	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C65	.047	400	73553	P488-047	DF-503	PTE4S5		4TM-S47	Video Amp. Cathode
C66	.0033	600	73795	P688-0033	D6-332	PTE6D3	GP2-333-332	6TM-D33	Video Amp. Cathode
C67	.047	600	73592	P688-047	DF-503	PTE6S5		6TM-S47	Video Coupling
C68	390	500	73094						Video Coupling
C69	.047	600	73592	P688-047	DF-503	PTE6S5		6TM-S47	Video Coupling
C70	270		76303	SI270	D6-271		GP2K-271	5GA-T27	Video Coupling
C71	.0022	600	73595	P688-0022	D6-222	PTE6D2	GP2-333-222	6TM-D22	DC Rest.-Sync. Sep. Grid
C72	10			SI10	D6-100	5W5Q1	GP1K-100	5GA-Q1	Sound IF Coupling
C73	10000		73960	BPD-01	DD-103	1D3S1	821-01	5HK-S1	1st. Sound IF Grid
C74A	10000		75877	BPD-01	DD-3-103	1D3S1	821-01	5HK-S1	1st. Sound IF Dec.
B	10000			BPD-01		1D3S1	821-01	5HK-S1	1st. Sound IF Cathode
C75	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	1st. Sound IF Fil.
C76	56		71924		TCN-56		N750K-560		2nd. Sound IF Grid
C77	10000		73960	BPD-01	DD-103	1D3S1	821-01	5HK-S1	2nd. Sound IF Plate
C78	1500		75166	SI1500	D6-152	1W5D15	GP2L-152	501C1	2nd. Sound IF Plate
C79	10000		73960	BPD-01	DD-103	1D3S1	821-01	5HK-S1	2nd. Sound IF Screen
C80	1500		75166	SI1500	D6-152	1W5D15	GP2L-152	501C1	2nd. Sound IF Screen
C81	10000		73960	BPD-01	DD-103	1D3S1	821-01	5HK-S1	2nd. Sound IF Fil.
C82	10000		73960	BPD-01	DD-103	1D3S1	821-01	5HK-S1	Ratio Det. Fil.
C83	470	500	39644	1468-0005	D6-471	5W5T5	GP2K-501	1FM-35	Diode Load Cap.
C84	470	500	39644	1468-0005	D6-471	5W5T5	GP2K-501	1FM-35	Diode Load Cap.
C85	330	500	75473	1468-0035	D6-331		GP2K-331	1FM-33	RF Bypass
C86	.0027	600	73599	P688-003	D6-272	PTE6D3	GP2-333-272	6TM-D3	De-emphasis
C87	.0047	600	73920	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Audio Coupling
C88	.015	200	73797	P288-015		PTE6S15		6TM-S15	Tone Comp
C89	0082	400	73808						Tone Comp.
C90	.01	400	73561	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C91	.0027	600	73599	P688-003	D6-272	PTE6D3	GP2-333-272	6TM-D3	Tone Comp.
C92	270	500	73091	1468-0003	D6-271	5W5T3	GP2K-271	MS-33	Tone Comp.
C93	.01	400	73561	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C94	.0047	600	73920	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Audio Output Plate
C95	.47	200	73787	P288-47		GT2P5		2TM-P47	Sync. Amp. Cathode
C96	.01	400	73561	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Vert. Sync. Coupling
C97	.0022	600	73595	P688-0022	D6-222	PTE6D2	GP2-333-222	6TM-D22	Vert. Integrator Net
C98	.0047	600	73920	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Vert. Integrator Net.
C99	.0047	600	73920	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Vert. Integrator Net
C100	.01	400	73594	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Vert. Osc. Grid Cap.
C101	.047	1000	73597	P1088-047		GT16S5		MB-S5	Vert. Discharge
C102	.22	600	74957	684-25		GP6P25		6TM-P25	Vert. Sweep Coupling
C103	.022	400	73562	P488-022	DF-203	PTE4S5		4TM-S22	Vert. Output Plate
C104	.047	1000	73597	P1088-047		GT16S5		MB-S5	Fixed Trimmer
C105	.047	1000	73597	P1088-047		GT16S5		MB-S5	Fixed Trimmer
C106	.0022	600	73595	P688-0022	D6-222	PTE6D2	GP2-333-222	6TM-D22	Horiz. Sync. Coupling
C107	82	500	73090						Horiz. Sync. Coupling
C108	82	500	73090						Horiz. Feedback
C109	.047	400	73553	P488-047	DF-503	PTE4S5		4TM-S47	AFC Filter
C110	.022	400	73562	P488-022	DF-203	PTE4S2		4TM-S22	AFC Filter
C111	.47	200	73787	P288-47		GT2P5		2TM-P47	AFC Filter
C112	.047	600	73592	P688-047	DF-503	PTE6S5		6TM-S47	AFC Plate
C113	180	1000	73102						Horiz. Osc. Grid Cap.
C114	.01	600	73594	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Fixed Trimmer
C115	.001	1000	75643	P1088-001		PTE16D1		MB-D1	Horiz. Discharge
C116	560	500	74250	SI560	D6-561		GP2K-561		Horiz. Sweep Coupling
C117	100		45233	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	Horiz. Output Screen
C118	.047	1000	73597	P1088-047		GT16S5		MB-S5	Horiz. Output Screen
C119	.22	400	73794	P488-22		GT4P2		4TM-P22	Horiz. Output Cathode
C120	4.7		75646						Fixed Trimmer
C121	.018	1000	74727						Damper Filter
C122	.022	1000	73810	P1088-022				MB-S22	Damper Filter
C123	56		76384						Focus Rectifier Filter
C124	.00025	12500	75250	15084-00025				12TVM-325	Focus Rectifier Filter
C125	500	20000	74947	HV20A		TV1-502	410-501		HV Filter
C126	.1	600	73557	P688-1	DF-104	PTE6P1		6TM-P1	Picture Tube Cathode
C127	.047	400	75071	P488-047	DF-503	PTE4S5		4TM-S47	Line Filter
C128	.047	400	75071	P488-047	DF-503	PTE4S5		4TM-S47	Line Filter
C129	1500		73748	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	2nd. Video IF Cathode

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1.5Meg	1/2	76171	Q18-139XX	AT-95	SBT-232-S	Volume Control - Tapped at 250KΩ and 500KΩ
B	Shaft		Not Req.	RQ	FKS-1/4	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWA	Not Req.	Attach to R1A per instructions
R2A	50KΩ	1/2	75514		RTV-193		Brightness Control - Panel
B	3500Ω						Contrast Control & Light Sw.- Rear
R3A	1Meg	1/2		Concentrikit	RTV-110	SBB-510	Vert. Hold Control - Panel
B	50KΩ		75215	B11-137 *			Horizontal Hold Control - Rear
C	Shaft end			B11-123 *			Attach per instructions in "Concentrikit"
				E-187 *			
R4A	2.5Meg	1/2	71440	Q11-239	AG-84-S	AN-83	Height Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R4A per instructions
R5A	5000Ω	1/2	71441	Q11-114	AM-19-S	AN-10	Vert. Linearity Control
B	Shaft		Not Req.	Not Req.	FKS-1/4"	AK-1	Attach to R5A per instructions
R6A	20KΩ	1/2	76516		AM-37-U	AN-22	Width Control
B	Shaft		Not Req.		FKS-1/4	AK-1	Attach to R6A per instructions
R7	25Meg		76503				Focus Control

* Additional Part to be used with "Concentrikit"

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE STATED
R8	3900Ω	1/2	503239		Antenna Coil Shunt
R9	27Ω	1/2	503027		RF Amplifier Cathode
R10	220KΩ	1/2	503322		RF Amplifier Screen
R11	3900Ω	1/2	503239		AGC Network
R12	150Ω	1/2	504115		AGC Network
R13	3300Ω	1/2	503233		RF Amplifier Plate
R14	100KΩ	1/2	504410		Mixer Grid
R15	2200Ω	1/2	503282		Mixer Grid Coil Shunt
R16	100KΩ	1/2	504410		Series Test Point
R17	10KΩ 5%	1/2	3078		Converter Transformer Shunt
R18	100KΩ	1/2	504410		Oscillator Grid
R19	10KΩ 5%	1/2	3078		Oscillator Plate
R20	10Meg	1/2	503610	BTS-10Meg	Voltage Divider
R21	150KΩ	1/2	503415	BTS-150K	AGC Network
R22	680Ω	1/2	503168	BTS-680	1st. Video IF Transformer Shunt
R23	150Ω	1/2	503118	BTS-150	Decoupling - See Note 1
R24	150Ω	1/2	503118	BTS-150	Decoupling - See Note 1
R25	10KΩ	2	503310	BTB-10K	Voltage Divider
R26	13KΩ	5		1 3/4A-13500	Voltage Divider - Wire Wound :
R27	1000Ω 20%	1/2	504210	BTS-1000	AGC Network
R28	82Ω 20%	1/2	503082		1st. Video IF Amplifier Cathode
R29	33KΩ	1/2	503333	BTS-33K	1st. Video IF Amplifier Screen
R30	1000Ω 20%	1/2	504210	BTS-1000	1st. Video IF Amplifier Plate Decoupling
R31	4700Ω 5%	1/2	30494	BTS-4700 5%	2nd. Video IF Amp. Grid
R32	82Ω 20%	1/2	504082		2nd. Video IF Amp. Cathode
R33	12KΩ	1/2	503312	BTS-12K	2nd. Video IF Amp. Plate
R34	47KΩ	1/2	503347	BTS-47K	2nd. Video IF Amplifier Screen
R35	1000Ω	1/2	503210	BTS-1000	2nd. Video IF Amp. Decoupling
R36	68KΩ	1	513368	BTA-68K	Trap Coil Shunt
R37	470KΩ	1/2	503447	BTS-470K	Trap Coil Isolation
R38	1000Ω	1/2	503210	BTS-1000	AGC Network
R39	82Ω 20%	1/2	504082		3rd. Video IF Amplifier Cathode
R40	33KΩ	1/2	503333	BTS-33K	3rd. Video IF Amplifier Screen
R41	1000Ω 20%	1/2	504210	BTS-1000	3rd. Video IF Amplifier Plate Decoupling
R42	180Ω	1/2	503118	BTS-180	4th. Video IF Amplifier Cathode
R43	1000Ω 20%	1/2	504210	BTS-1000	4th. Video IF Amplifier Screen
R44	33KΩ	1/2	503333	BTS-33K	4th. Video IF Amplifier Decoupling
R45	6800Ω 5%	1	512368	BTA-6800 5%	4th. Video IF Amplifier Plate
R46	1000Ω 20%	1/2	504210	BTS-1000	4th. Video IF Amplifier Decoupling
R47	18KΩ	1/2	503318	BTS-18K	AGC Network
R48	18KΩ	1/2	503318	BTS-18K	AGC Network
R49	33KΩ	1/2	503333	BTS-33K	AGC Rectifier Plate
R50	5600Ω 5%	1/2	30734	BTS-5600 5%	Video Detector Diode Load
R51	220Ω	1/2	503122	BTS-220	Video Amplifier Cathode
R52	100KΩ	1/2	503410	BTS-100K	Voltage Divider
R53	3300Ω	1/2	503333	BTS-3300	Voltage Divider
R54	4700Ω	1/2	503247	BTS-4700	Video Amplifier Plate
R55	220Ω	1/2	503122	BTS-220	Video Amplifier Cathode - Wire Wound
R56	560KΩ	1/2	503456	BTS-560K	Video Amplifier Grid
R57	2700Ω	1	503327	BTA-2700	Video Amplifier Plate
R58	4700Ω	1	513247	BTA-4700	Video Amplifier Plate
R59	120KΩ	1/2	503412	BTS-120K	Voltage Divider
R60	15KΩ	1	513315	BTA-15K	Decoupling
R61	6800Ω	5		1 3/4A-7000	Decoupling - Wire Wound
R62	4700Ω	1/2	503247	BTS-4700	Isolation
R63	56KΩ	1/2	503356	BTS-56K	Sync. Sep. Grid
R64	150KΩ	1/2	503415	BTS-150K	Isolation
R65	47KΩ	1/2	503347	BTS-47K	AGC Network
R66	56KΩ	1/2	503356	BTS-56K	Sync. Sep. Plate
R67	100KΩ	1/2	503410	BTS-100K	Voltage Divider - See Note 2
R68	47KΩ	1/2	503347	BTS-47K	Voltage Divider
R69	220KΩ	1/2	503422	BTS-220K	Sync. Sep. Cathode
R70	220KΩ	1/2	503422	BTS-220K	Voltage Divider
R71	220KΩ	1/2	503422	BTS-220K	DC Restorer Load
R72	220KΩ	1/2	503422	BTS-220K	DC Restorer Load
R73	4700Ω	1/2	503247	BTS-4700	Isolation
R74	820KΩ	1	503482	BTA-820K	Picture Tube Grid
R75	150KΩ 20%	1/2	504415	BTS-150K	Picture Tube Cathode
R76	56KΩ 5%	1/2	502368	BTS-56K 5%	1st. Sound IF Coil Shunt
R77	470KΩ	1/2	503447	BTS-470K	1st. Sound IF Amplifier Grid
R78	82Ω	1/2	503082		1st. Sound IF Amplifier Cathode
R79	1000Ω 20%	1/2	504210	BTS-1000	1st. Sound IF Amplifier Decoupling
R80	47KΩ	1/2	503347	BTS-47K	2nd. Sound IF Amplifier Grid
R81	68Ω 5%	1/2	34763		2nd. Sound IF Amplifier Cathode
R82	12KΩ	1/2	503312	BTS-12K	2nd. Sound IF Amplifier Screen
R83	1000Ω	1/2	503210	BTS-1000	2nd. Sound IF Amplifier Decoupling
R84	47KΩ	1/2	503347	BTS-47K	Voltage Divider
R85	47Ω	1/2	503047		Balancing
R86	1000Ω 5%	1/2	502210	BTS-1000 5%	Balancing
R87	1000Ω 5%	1/2	502210	BTS-1000 5%	Balancing
R88	6800Ω 5%	1/2	14659	BTS-6800 5%	Ratio Detector Diode Load

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA PART No.	IRC PART No.	IDENTIFICATION CODES
R89	6800Ω 5%	1/2	14659	BTS-6800 5%	Ratio Detector Diode Load
R90	22KΩ	1/2	503342	BTS-22K	De-emphasis
R91	18KΩ	1/2	503318	BTS-18K	Tone Compensation
R92	27KΩ	1/2	503327	BTS-27K	Tone Compensation
R93	22KΩ	1/2	503322	BTS-22K	Tone Compensation
R94	10Meg 20%	1/2	504610	BTS-10Meg	AF Amplifier Grid
R95	330KΩ	1/2	503433	BTS-330K	AF Amplifier Plate
R96	470KΩ	1/2	503447	BTS-470K	Output Grid
R97	100Ω	1/2	503110	BTS-100	Output Cathode
R98	390Ω	1	513139	BTA-390	Output Cathode
R99	470Ω	1	513147	BTA-470	Output Decoupling
R100	10KΩ	1/2	503310	BTS-10K	Isolation
R101	18KΩ	1/2	503318	BTS-18K	Voltage Divider
R102	18KΩ	1/2	503318	BTA-18K	Sync. Amplifier Plate
R103	2200Ω 20%	1/2	504222	BTS-2200	Sync. Amplifier Cathode
R104	22KΩ	1/2	503322	BTS-22K	Voltage Divider
R105	22KΩ	1/2	503322	BTS-22K	Integrator Network
R106	8200Ω	1/2	503282	BTS-8200	Integrator Network
R107	8200Ω	1/2	503282	BTS-8200	Integrator Network
R108	820KΩ	1/2	503482	BTS-820K	Vertical Oscillator Grid
R109	1.2Meg 5%	1/2		BTS-1.2Meg 5%	Vertical Blocking Transformer Shunt - See Note 3
R110	270KΩ	1/2	503427	BTS-270K	Vertical Oscillator Plate
R111	12KΩ 5%	1/2	30436	BTS-12K 5%	Vertical Peaking
R112	2.2Meg	1/2	503522	BTS-2.2Meg	Vertical Output Grid
R113	1500Ω	1	513215	BTA-1500	Vertical Output Cathode
R114	15KΩ	1/2	503315	BTS-15K	Vertical Linearity Control Shunt
R115	180KΩ	1/2		BTS-180K	Damping
R116	1000Ω 20%	1/2	504210	BTS-1000	Vertical Output Decoupling
R117	220KΩ	1/2	503422	BTS-220K	Decoupling
R118	150KΩ 20%	1/2	504415	BTS-150K	Voltage Divider
R119	330KΩ	1/2	503433	BTS-330K	Horizontal AFC Grid
R120	820KΩ	1/2	503482	BTS-820K	Horizontal AFC Grid
R121	82KΩ	1	513382	BTA-82K	Horizontal AFC Cathode
R122	330K Ω	1	513433	BTA-330K	Horizontal AFC Cathode
R123	68KΩ	1/2	502368	BTS-68K	Voltage Divider
R124	82KΩ 5%	1	513382	BTA-82K 5%	Voltage Divider
R125	150KΩ 5%	1/2	31895	BTA-150K 5%	Horizontal Oscillator Grid
R126	8200Ω 5%	1/2	502282	BTS-8200 5%	Horizontal Oscillator Transformer Shunt
R127	82KΩ	1	513382	BTA-82K	Horizontal Oscillator Plate
R128	150KΩ	1/2	503415	BTS-150K	Feedback Network
R129	47Ω 5%	1/2	34763		Parasitic Suppressor
R130	820KΩ	1	503482	BTA-820K	Horizontal Output Grid
R131	100Ω	2	523110	BTB-100	Horizontal Output Cathode - Wire Wound
R132	33KΩ	1/2	503333	BTS-33K	Horizontal Output Screen
R133	6800Ω	2	513282	BTA-6800	Voltage Divider
R134	1Meg	1/2	504510	BTS-1Meg	Damping
R135	15Meg	2		BTB-15Meg	Voltage Divider - See Note 4
R136	18Meg	2	523618	BTB-18Meg	Voltage Divider
R137	82Ω	1/2	503082		Focus Rectifier Filament
R138	4000Ω	10		1 3/4A-4000	Filter - Wire Wound
R139	18KΩ	10		1 3/4A-18K	Filter - Wire Wound
R140	56KΩ	1/2	503356	BTS-56K	Filter - See Note 5
R141	27KΩ	1/2	503327	BTS-27K	Filter - See Note 5
R142	4300Ω	5		13/4A-4500	Voltage Divider - Wire Wound
R143	220Ω	1		BTA-220	Voltage Divider - Wire Wound
R144	3900Ω	1/2	503239	BTS-3900	Horizontal AFC Filter

Note 1. Some Models use a 100Ω Resistor in this application
Note 2. Some Models use a 220KΩ Resistor in this application
Note 3. Some Models use a 1 Meg Resistor in this application
Note 4. Some Models use a 10 Meg Resistor in this application
Note 5. Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 1.5A	720VCT .200ADC	5VAC @ 3.0A	6.3VAC @ 8.0A SEC. 4 6.3VAC @ 1.2A	75508	P-6315 P-6134①	P-3070	TP-370

① Mount Beneath Chassis

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	165Ω	1310Ω	74144	A-8122	A-4000②	TBO-2	Vertical Osc. Trans.
T3	250Ω Tapped @ 25Ω	0Ω SEC.2 0Ω	76381				Horizontal Output Trans.
T4	400Ω	.32Ω	74950				Vertical Output Trans.
T5A	43Ω		74952				Horiz. Deflection Coils
B	3.5Ω						Vert. Deflection Coils

② Drill one New Mounting Hole

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T6	7KΩ	34Ω	370Ω	.4Ω	75520	A-3878 ②	A-3020	RO-13②	② Drill One New Mounting Hole

RCA
MODEL 7T111B (Ch. KCS47GF-2)

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	RCA PART No.	JENSEN PART No.	QUAM PART No.	
SP1	P. M.	3.4Ω	75022	ST.-117 Mod. P8-T	8A31	
	CONE DIA.	V. C. DIA.				
SP2	7 3/8 in.	1 in.	75024			

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ↺)	RCA PART No.	STANCOR PART No.	MERIT . PART No.	CHICAGO PART No.	
L1	.200A	45Ω	1.1HY	76284	C-2325	C-2996	TR-4200②	②

② Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	RCA PART No.	MERIT PART No.	IRC PART No.	
L2	Ant. Coil	.6Ω	.6Ω	73591			
L3	Ant. Coil	.6Ω	.6Ω	73591			
L4	IF Trap	.2Ω		75242			Complete Antenna Matching
L5	Ant. Shunt	.4		75241			Assembly Part #75509
L6	IF Trap	.2Ω		75242			
L7	FM Trap	0Ω		75449			
L8	Ant. Coils	0Ω		75180			Complete with rotor, Coils, R8, R11, R12, C9 and C10.
L9	RF Coils	0Ω		75179			Complete With Rotor, Coils, R13 and C15
L10	RF Coils	0Ω		75183			Includes Trimmer .8-3 MMF
L11	Fil. Choke	0Ω		73477			
L12	Mixer Grid Coils	0Ω		75178			Complete With Rotor, Coils, R14, R15, R16, C14, C16.
L13	Mixer Grid Coil	0Ω		75182			Includes Trimmer .8-3.8MMF
L14	Osc. Coils	0Ω		75175			Complete With Roror, Coils, C19 and C21.
L15	Fil. Choke	0Ω					
L16	17MC Trap	0Ω		75185			
L17	RF Choke	.31Ω		75202		CLA	.56 Micro Henries
L18	Conv. Plate	.8Ω	.2Ω	75181			
L19	1st. Video IF	.1Ω	.6Ω	74589			Includes Trap
L20	Fil. Choke	0Ω		73477			
L21	2nd. Video IF	.1Ω		74590			Includes Trap
L22	3rd. Video IF	.2Ω	.1Ω	76264			Includes Trap
L23	Peaking Coil	3Ω		76285			Wound On 22K Resistor. 36 Microhenries.
L24	Fil Choke	0Ω		73477			
L25	4th. Video IF	.1Ω		73574			Includes Trap
L26	5th. Video IF	.5Ω		75210			Tap at .3Ω
L27	Sound Take Off	6.5Ω		76703			Tap at 1.4Ω
L28	Peaking Coil	2.9Ω		75299			Orange-White Dots 36 Microhenries
L29	Peaking Coil	12Ω		75252			Green-White Dots 500 Microhenries
L30	Peaking Coil	2.4Ω		71793			Black Dot, Wound on 47MMF Cap. 36 Microhenries
L31	4.5MC Trap	2.6Ω		75251			Green-Yellow Dots, Wound on 47MMF Cap
L32	Peaking Coil	12Ω		75252			Green-White Dots 500 Microhenries
L33	Peaking Coil	12Ω		75252			Green-White Dots 500 Microhenries
L34	Peaking Coil	2.6Ω		75253			Blue-Red Dots, 120 Microhenries
L35	Sound IF	5.4Ω	3.4Ω	76438			
L36	Fil. Choke	0Ω		73477			
L37	Ratio Det. Trans.	5.2Ω	.4Ω	76702			Tap at .8Ω
L38	Horiz. Osc.	110Ω	34Ω	75213			
L39	Horiz. Lin.	36Ω		71449	NWC-1		

FUSES

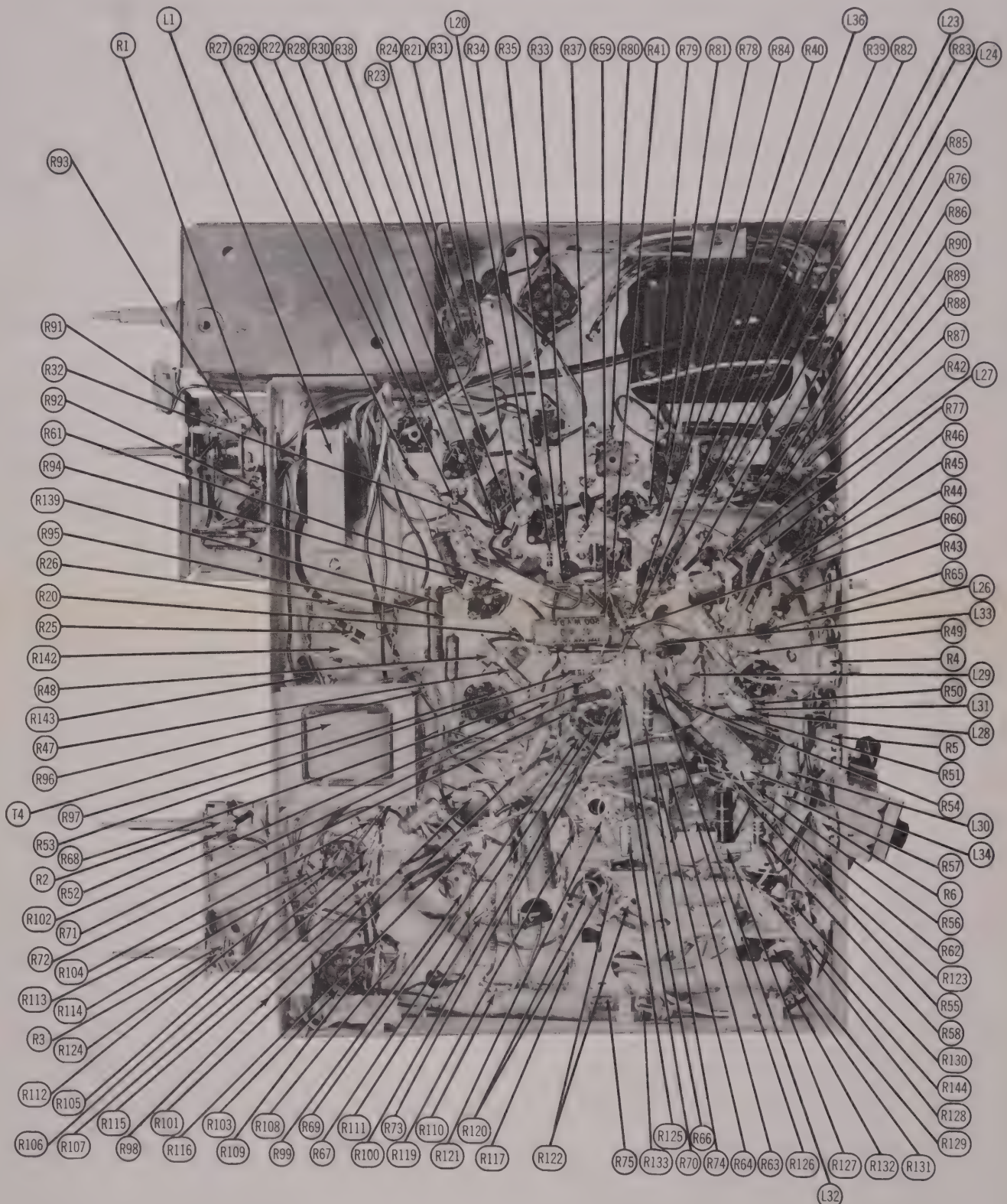
ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			RCA PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	1/4A	73600		318.250		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					RCA PART No.		
M2	Bayonet	7.5	.2	White	11765	Type NO. 51	
M3	Bayonet	7.5	.2	White	11765	Type NO. 51	

MISCELLANEOUS

ITEM No.	PART NAME	RCA PART No.	NOTES
M4	RF Tuner	KRK8B	
M5	Switch	76170	Tone
M6	Switch	76010	AGC
M7	Centering magnet	76375	
M8	Ion Trap	76317	
A16	Trimmer	76532	1-4MMF (Balancing In Ratio Det.)
B4, B2	Trimmer	75217	Dual (Horiz. Drive-10-160MMF, Horiz Lock 10-160MMF)
	Knob	74959	Fine Tuning (Maroon)
	Knob	75461	Fine Tuning (Beige)
	Knob	74960	Channel Selector (Maroon)
	Knob	75462	Channel Selector (Beige)
	Knob	74962	Brightness, Vert. Hold (Maroon)
	Knob	75463	Brightness, Vert. Hold (Beige)
	Knob	76174	Tone And Phono (Maroon)
	Knob	76175	Tone And Phono (Beige)
	Knob	74963	Contrast Horiz. Hold (Maroon)
	Knob	75464	Contrast, Horiz. Hold (Beige)
	Knob	74969	Focus



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PHOTOFACT* Folder

SILVERTONE
MODEL 133

IMPORTANT FILING NOTICE

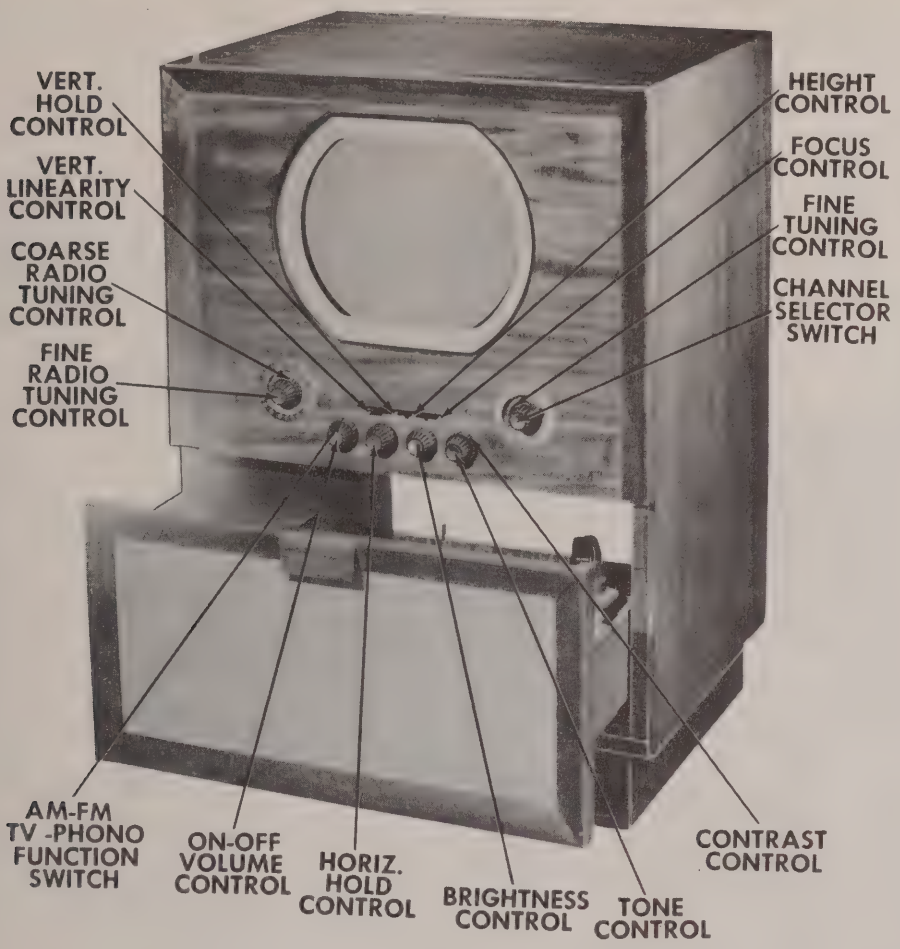
The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

SILVERTONE
MODEL 133

HOWARD W. SAMS & CO., INC. • Indianapolis, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1952 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America



SILVERTONE MODEL 133

TRADE NAME	Silvertone Model 133 (Chassis 100.107, 100.107-1 and Radio Chassis 100.043)
SUPPLIER	Sears Roebuck and Co., 925 S. Homan, Chaicago, Ill.
TYPE SET	TV-FM-AM-Phono Combination Receiver
TUBES Thirty	
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 1.85 Amp. @ 117 Volts AC
TUNING RANGE—	(TV) Channels 2 thru 13. (FM) 88-108MC. (AM) 540-1600KC.

INDEX

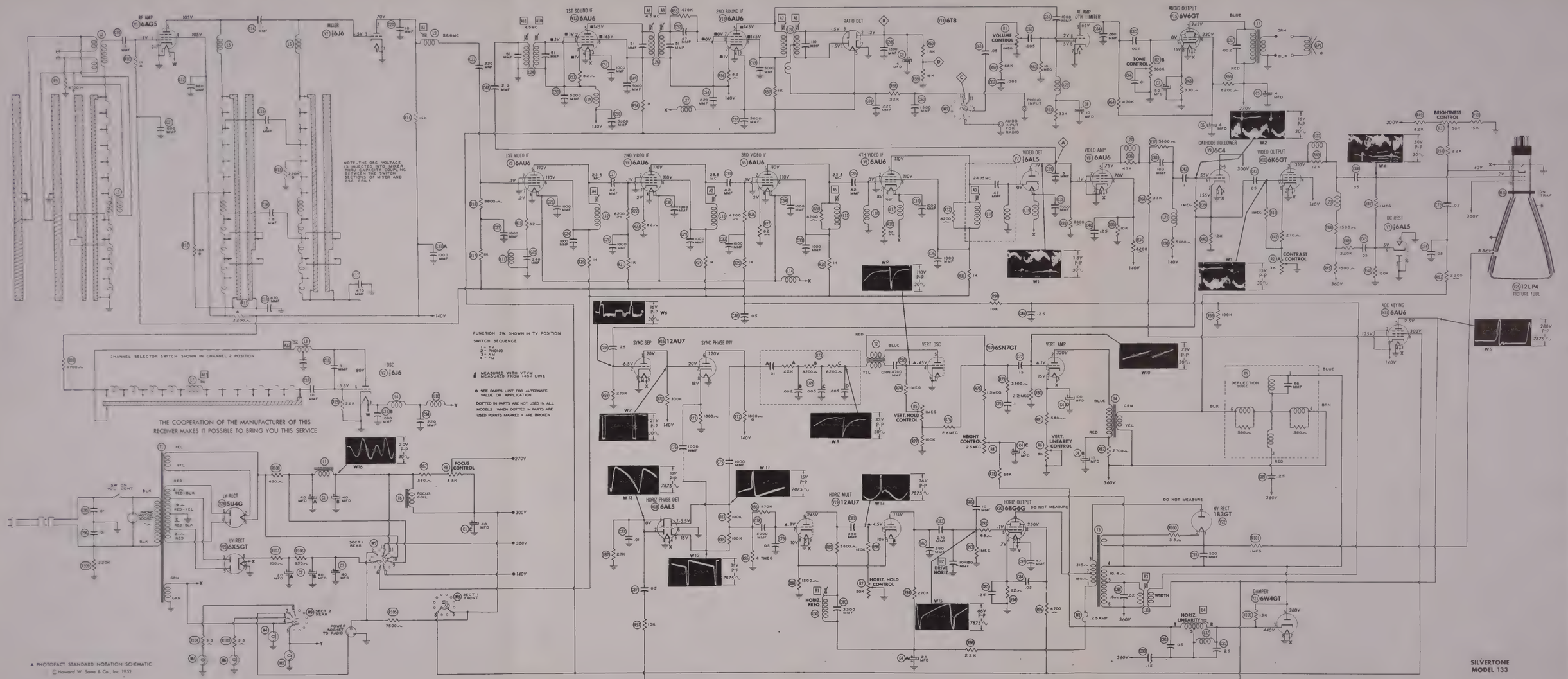
Alignment Instructions 6, 7
Drive Cord Stringing 8
Disassembly Instructions 11
Horizontal Sweep Circuit Adjustments 11
Parts List and Descriptions ..... 12 thru 16
Photographs
Cabinet - Rear View 11
Capacitor and Alignment Identification 4, 9
Chassis - Top View 3
Photographs (cont.)
RF Tuner 10
Radio Chassis 17
Resistor and Inductor Identification 19, 20
Resistance Measurements (TV) ..... 8.
Schematic (Radio) 18
Schematic (TV) 2
Tube Placement Charts 5

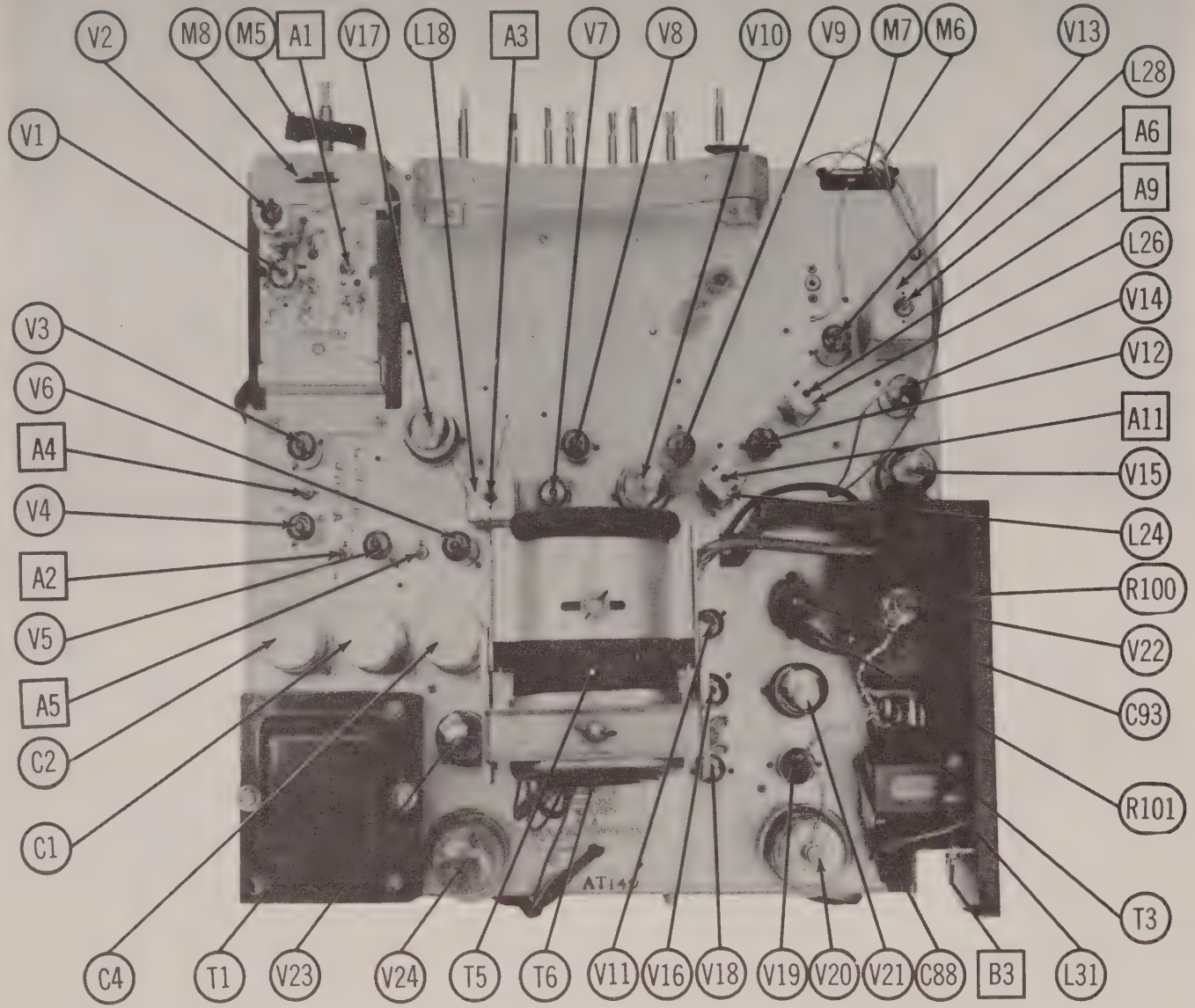
FOR RECORD CHANGER INFORMATION, SEE V-M MODEL 406, PHOTOFACT SET 102, FOLDER 16, OR RECORD CHANGER MANUAL CM-3.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

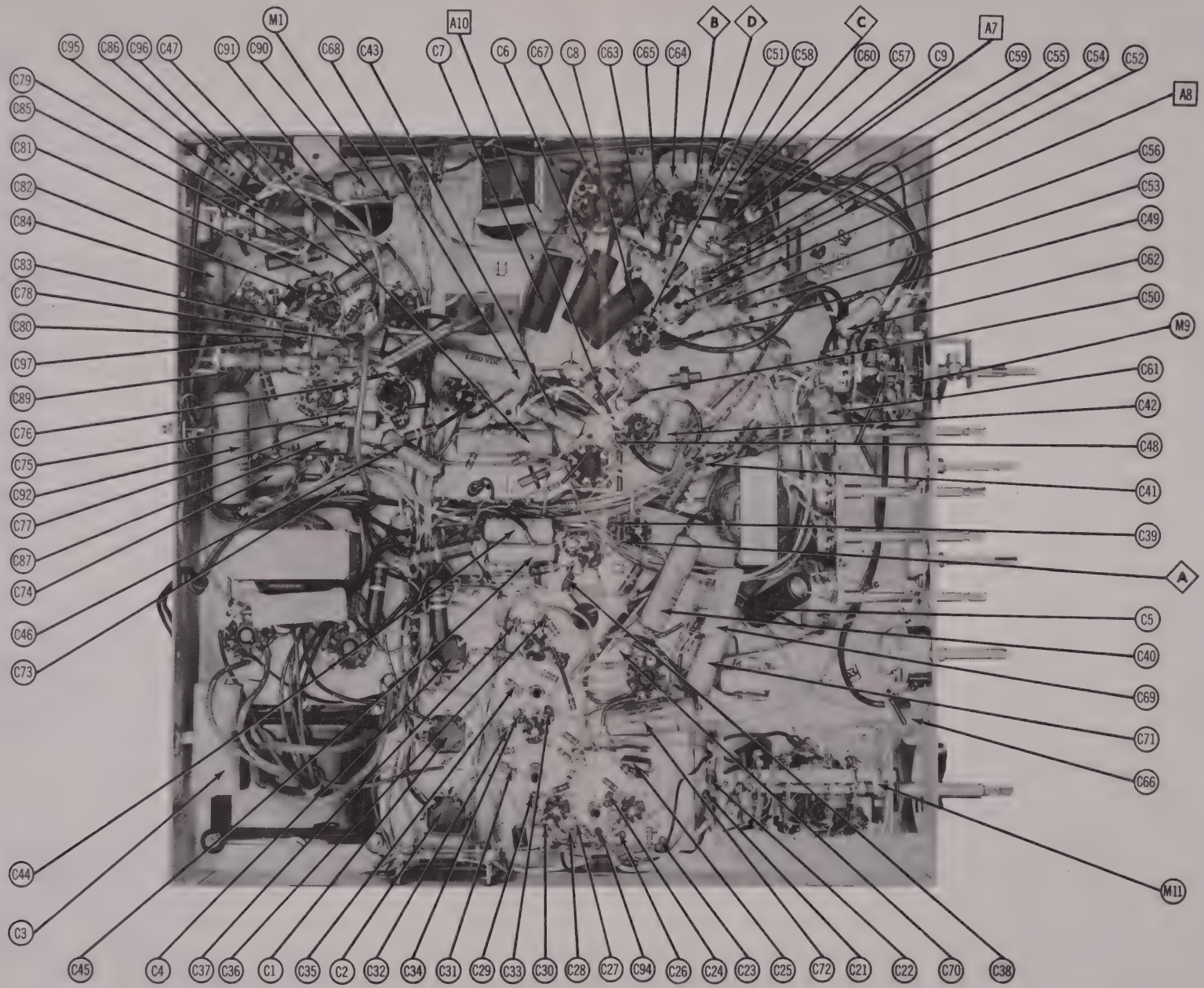
"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1952 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

SILVERTONE
MODEL 133


SILVERTONE
MODEL 133
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1952
SILVERTONE
MODEL 133



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Turn the selector switch to TV (Maximum counter-clockwise).
The high voltage shock hazard may be eliminated by unsoldering the yellow and green wire connected to terminal "T" of L32.

VIDEO IF ALIGNMENT

Remove the converter tube, (V3) and replace it with a 6J6 which has Pin removed, this will disable the local oscillator and prevent the possibility of erroneous indications.
Connect the negative lead of a 3 Volt battery to the ungrounded lead of C46, connect the positive lead to chassis.
Detune trap coil L11 by compressing the coil to reduce the turn spacing. Failure to do so may result in IF oscillations.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	26.6MC (unmod.)	Any	DC probe to point (A). Common to chassis.	A1, A2	Adjust for maximum deflection.
2.	"	"	24.75MC	"	"	A3	"
3.	"	"	23.5MC	"	"	A4, A5	"
4.	"	"	22.4MC	"	"	L11	Expand coil turns for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	25MC (10MC Swp)	22.25MC 26.75MC	Any	Vert. Amp. thru 22KΩ to point (A). Low side to chassis.		Check for response curve similar to fig. 1. If necessary retouch A1 thru A5 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD	High side to pin 1, (grid), of 6AU6 (V12). Low side to chassis.	4.5MC (unmod)	Any	DC probe to point (B). Common to chassis.	A6, A7 A8, A9	Adjust for maximum deflection.
7.	"	High side to pin 1. (cathode), of 6AL5, (V7). Low side to chassis.	"	"	"	A10, A11	"
8.	"	"	"	"	DC probe to point (C). Common to point (D).	A6	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.01MFD	High side to pin 1, (grid) of 6AU6, (V12). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point (B). Low side to chassis.	A7, A8, A9	Disconnect stabilizor capacitor C9. Adjust for maximum amplitude and symmetry as per fig. 2.
7.	"	High side to pin 1, (cathode), of 6AL5, (V7). Low side to chassis.	"	"	"	"	A10, A11	"
8.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A6	Reconnect capacitor C9. Adjust A6 so 4.5 MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Leave the 3 Volts bias connected as during Video IF alignment.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC swp.)	211.25MC 215.75MC	13	Vert. Amp. to Point (A). Low side to chassis.	A12	Adjust to place markers as shown in Fig. 4.
10.	"	"	207MC (10MC Swp.)	205.25MC 209.75MC	12	"		Check all high band channels to see if markers can be properly placed well, within the range of the fine tuning control. If not, make compromise adjustment of A12.
			201MC (10MC swp.)	199.25MC 203.75MC	11			
			195MC (10MC swp.)	193.25MC 197.75MC	10			
			189MC (10MC swp.)	187.25MC 191.75MC	9			
			183MC (10MC swp.)	181.25MC 185.75MC	8			
			177MC (10MC swp.)	175.25MC 179.75MC	7			
11.	"	"	85MC (10MC swp.)	83.25MC 87.75MC	6	"	A13	Adjust to place markers as shown in Fig. 4.
12.	"	"	79MC (10MC swp.)	97.25MC 81.75MC	5	"		Check all low band channels to see if the markers can be properly placed well within the range of the fine tuning control. If not, make compromise adjustment of A13.
			69MC (10MC swp.)	67.25MC 71.75MC	4			
			63MC (10MC swp.)	61.25MC 65.75MC	3			
			57MC (10MC swp.)	55.25MC 59.75MC	2			

THE RF AND MIXER PORTION OF THIS RECEIVER HAS BEEN PROPERLY ALIGNED AT THE FACTORY AND IS VERY STABLE. ALIGNMENT OF THIS PORTION SHOULD NOT BE REQUIRED IN THE FIELD.

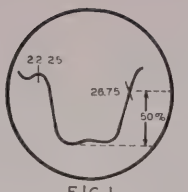


FIG. 1

FIG. 2

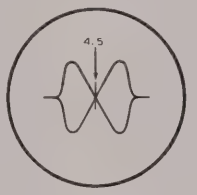


FIG. 3

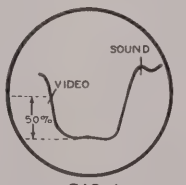


FIG. 4

RADIO ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Replace the dial escutcheon and both knobs on the tuning shafts.
Turn the tuning knob to fully counter-clockwise. At this position the tuning gang should be fully closed, if it is not loosen the set screw on the tuning gang drive drum and close the gang. Tighten the set screw to lock the drum.
During AM and FM RF alignments it is necessary to hold the escutcheon in its normal position so that the heavy lines below 88 and 108 are horizontal.
With the tuning gang fully closed, the pointer should point to the heavy line below 88 on the escutcheon.
The bottom cover must be in place during both AM and FM RF alignments.

AM ALIGNMENT

Turn the selector switch to AM, (third position clockwise).
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
13.	.1MFD	High side to stator on rear section of tuning gang. Low side to chassis.	455KC (400%Mod.)	AM third pos. clockwise	Tuning gang fully open.	Across voice coil.	A14, A15 A16, A17	Adjust for maximum output.
14.		Loop	1500KC	"	1500KC	"	A18, A19	Adjust for maximum output.
15.		Loop	600KC	"	600KC	"	A20	Adjust for maximum output. Repeat adjustment of A19 and A20 until no further improvement can be made.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
16.	.01MFD	High side to Pin 1, (Grid), of 6BA6, (V28). Low side to chassis.	10.7MC (unmod)	FM (max. CW)	Tuning gang fully closed.	DC probe to Point (E). Common to chassis.	A21, A22 A23, A24	Adjust for maximum deflection.
17.	"	High side to Pin 2 (Grid) of 12AT7, (V26). Low side to chassis.	"	"	"	"	A25, A26	Adjust for maximum deflection.
18.	"	"	"	"	"	DC probe to Point (F). Common to Point (G).	A21	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
16.	.01MFD	High side to Pin 1, (Grid), of 6BA6, (V28). Low side to chassis.	10.7MC (450KC swp)	FM (max. CW)	Point of non-terference.	Vert. amp. to Point (E). Low side to chassis.	A22, A23 A24	Disconnect stabilizor capacitor C97. Adjust for maximum amplitude and symmetry as per Fig. 5.
17.	"	High side to Pin 2, (Grid), of 12AT7, (V26). Low side to chassis.	"	"	"	"	A25, A26	Disconnect stabilisoe capacitor C97. Adjust for maximum amplitude and symmetry as per Fig. 5.
18.	"	"	"	"	"	Vert. amp. to Point (F). Low side to chassis.	A21	Reconnect capacitor C97. Adjust A21 so 10.7MC occurs at center of crossover lines as per Fig. 6. SLIGHTLY retouch A22 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
19.	270Ω carbon resistors.	High side thru 270Ω to FM ant. terminal. Low side to chassis.	108MC (400% AM mod.)	FM	108MC	Across voice coil.	A27	Adjust for maximum output.
20.	"	"	106MC	"	106MC	"	A28	Adjust for maximum output.
21.	"	"	88MC	"	88MC	"	L37	If necessary expand of compress coil turns for maximum output. If L37 is changed repeat steps 20 and 21 until no further improvement can be made.

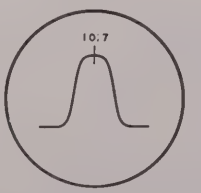


FIG. 5

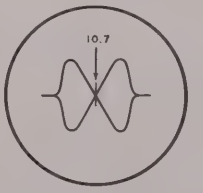


FIG. 6

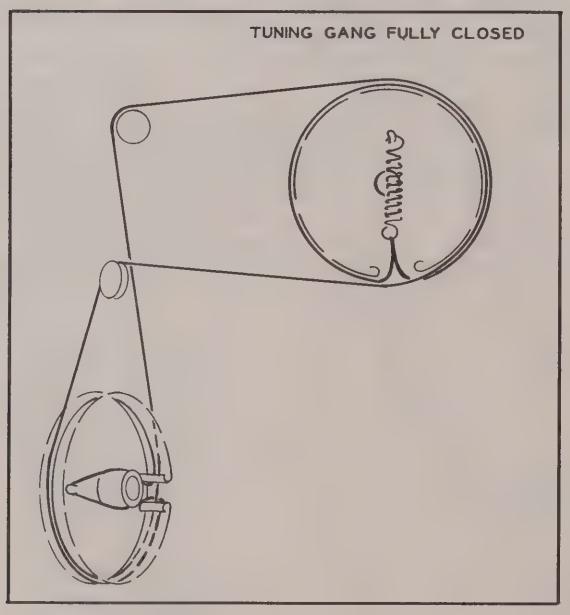
SILVERTONE MODEL 133

RESISTANCE MEASUREMENTS

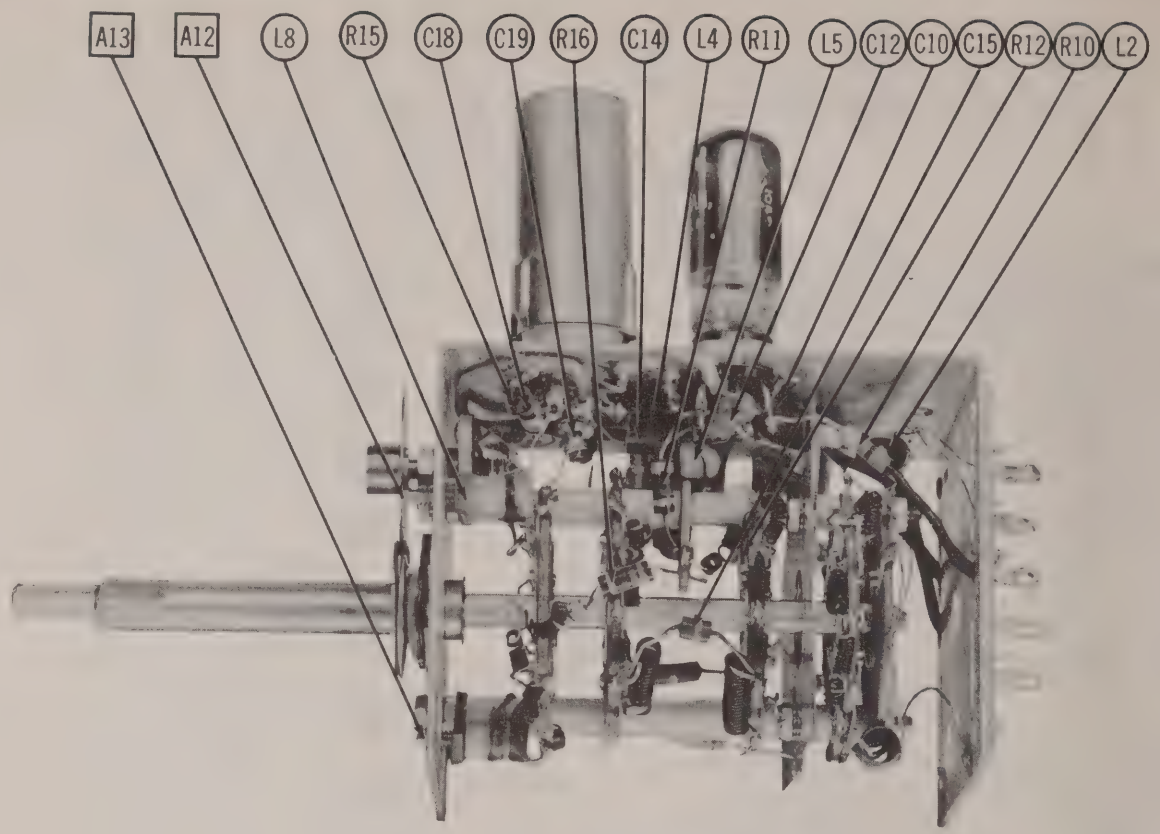
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	111KΩ	0Ω	.1Ω	0Ω	¶3.1KΩ	¶3.1KΩ	0Ω		
V 2	6J6	¶5.6KΩ	¶15KΩ	0Ω	.2Ω	220KΩ	22KΩ	0Ω		
V 3	6AU6	118KΩ	0Ω	.1Ω	0Ω	¶1.9KΩ	¶1.9KΩ	82Ω		
V 4	6AU6	119KΩ	0Ω	.1Ω	0Ω	¶1.9KΩ	¶1.9KΩ	82Ω		
V 5	6AU6	115KΩ	0Ω	.1Ω	0Ω	¶1.9KΩ	¶1.9KΩ	82Ω		
V 6	6AU6	2.3Ω	0Ω	.2Ω	0Ω	¶1.9KΩ	¶1.9KΩ	68Ω		
V 7	6AL5	2.3Ω	0Ω	.5Ω	0Ω	100K	0Ω	6.8KΩ		
V 8	6AU6	6.8KΩ	0Ω	.1Ω	0Ω	¶12KΩ	¶7.4KΩ	0Ω		
V 9	6C4	†850Ω	Inf.	0Ω	.1Ω	†850Ω	1Meg	12KΩ		
V 10	6K6GT	Inf.	0Ω	†3KΩ	¶950Ω	1Meg	Inf.	.1Ω	300Ω	
V 11	6AU6	¶45KΩ	¶950Ω	.1Ω	0Ω	100KΩ	†850Ω	¶950Ω		
V 12	6AU6	■16Ω	■16Ω	.1Ω	0Ω	†1.8KΩ	†1.8KΩ	■100Ω		
V 13	6AU6	■470KΩ	■0Ω	.5Ω	0Ω	†1.8KΩ	†1.8KΩ	■82Ω		
V 14	6T8	Inf.	36KΩ	Inf.	0Ω	.5Ω	33KΩ	0Ω	10Meg	†470K
V 15	6V6GT	Inf.	.1Ω	†2.3KΩ	†10KΩ	500KΩ	†1.7KΩ	0Ω	330Ω	
V 16	12AU7	¶330KΩ	270KΩ	0Ω	0Ω	0Ω	¶2.7KΩ	¶330KΩ	1.8KΩ	.1Ω
V 17	6SN7GT	2.2Meg	†4.2KΩ	1.4KΩ	1.7Meg	#1.4Meg	0Ω	0Ω	.1Ω	
V 18	6AL5	27KΩ	27KΩ	0Ω	.1Ω	4.8Meg	0Ω	4.8Meg		
V 19	12AU7	#290KΩ	195KΩ	1.5KΩ	0Ω	0Ω	#27KΩ	5.1Meg	1.5KΩ	.1Ω
V 20	6BG6G	Inf.	0Ω	82Ω	Inf.	1Meg	1Meg	.1Ω	†5.6KΩ	TOP CAP #160Ω
V 21	6W4GT	45KΩ	Inf.	†15KΩ	Inf.	†20Ω	Inf.	.1Ω	0Ω	
V 22	1B3GT	PINS 1 THROUGH 8 HAVE INF RESISTANCE								TOP CAP #425Ω
V 23	6X5GT	Inf.	.1Ω	19Ω	†0Ω	19Ω	Inf.	0Ω	18KΩ	
V 24	5U4G	¶950Ω	100KΩ	Inf.	40Ω	.1Ω	40Ω	Inf.	100KΩ	
V 25	12LP4	0Ω	1.1Meg	PIN 10 †10Ω	PIN 11 37KΩ	PIN 12 .1Ω				

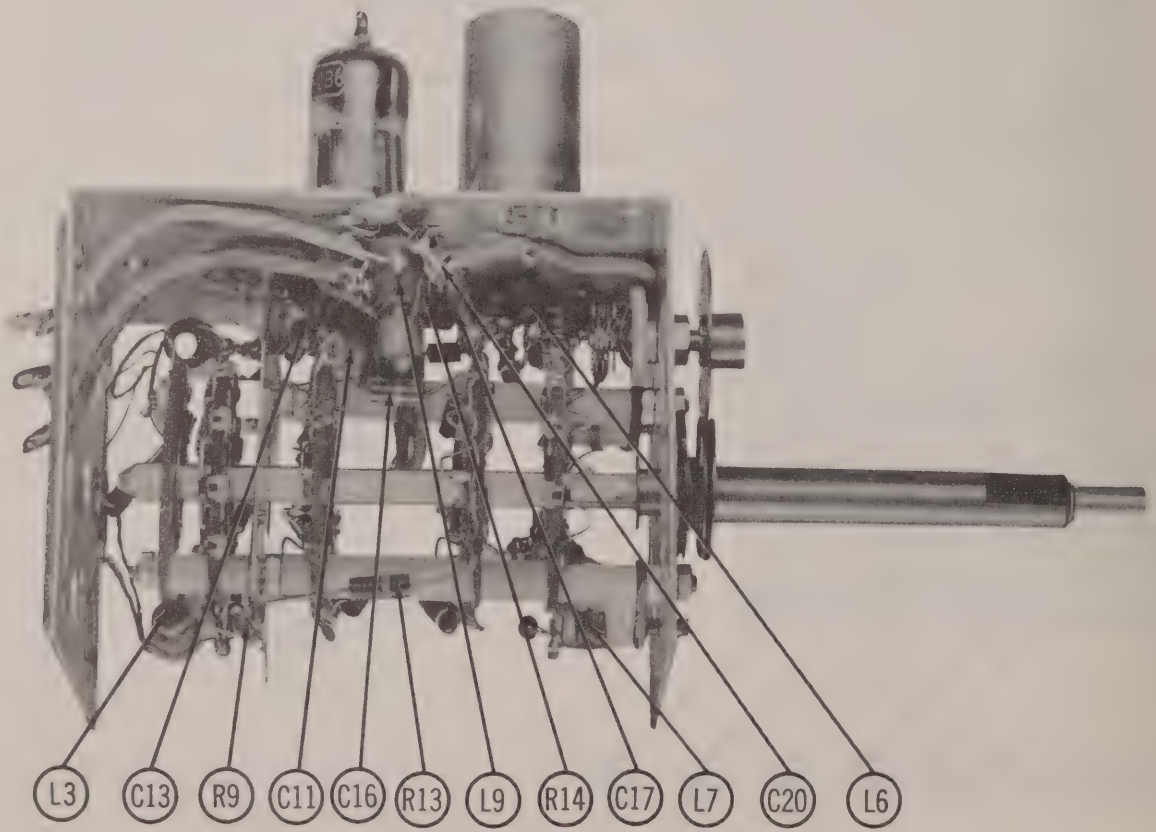
ALL MEASUREMENTS TAKEN IN TV POSITION
ALL CONTROLS SET FOR NORMAL OPERATION
† MEASURED FROM PIN 8 OF V24
¶ MEASURED FROM PIN 8 OF V23
■MEASURED FROM 140VDC LINE
MEASURED FROM PIN 3 OF V 21



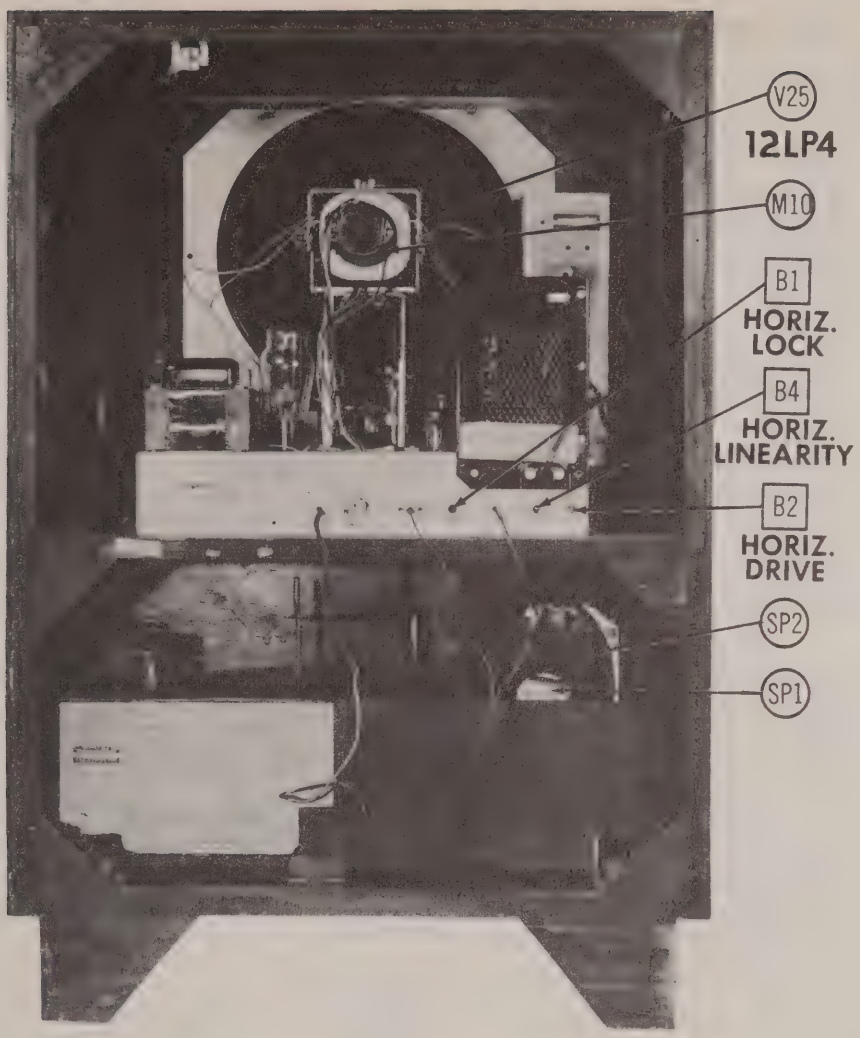
DIAL CORD STRINGING



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal lock slug, (B1), to the center of the range over which the picture synchronizes horizontally.

Adjust the horizontal drive trimmer, (B2), counter-clockwise as far as possible without crowding, or bright vertical lines, appearing in the picture.

Adjust the width slug, (B3), until the picture is slightly wider than necessary to fill the mask horizontally.

Adjust the horizontal linearity slug, (B4), until the picture is symmetrical from left to right.

Since both width and horizontal linearity are affected by the drive trimmer, it may be necessary to adjust them alternately for optimum results.

DISASSEMBLY INSTRUCTIONS

1. Remove 11 control knobs from front panel.
2. Remove 7 screws holding back cover. Remove cover.
3. Disconnect built-in antenna.
4. Disconnect speaker and phono leads.
5. Remove off/on indicator lamp.
6. Remove 4 bolts holding chassis. Remove chassis.

Note: For picture tube removal it is necessary to remove chassis as outlined above.

TV PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video Amp.	6AU6	6AU6	7BK	
V4	2nd. Video Amp.	6AU6	6AU6	7BK	
V5	3rd. Video Amp.	6AU6	6AU6	7BK	
V6	4th. Video Amp.	6AU6	6AU6	7BK	
V7	Video Det.-DC. Restorer	6AL5	6AL5	6BT	
V8	Video Amp.	6AU6	6AU6	7BK	
V9	Cathode follower	6C4	6C4	6BG	
V10	Video Output	6K6GT	6K6GT	7S	
V11	AGC Keyed	6AU6	6AU6	7BK	
V12	1st. Sound IF Amp.	6AU6	6AU6	7BK	
V13	2nd. Sound IF Amp.	6AU6	6AU6	7BK	
V14	Ratio Det.-AF Amp Dyn. Limiter	6T8	6T8	9E	
V15	Audio Output	6V6GT	6V6GT	7AC	
V16	Sync. Sep.-Sync. Phas Inverter	12AU7	12AU7	9A	
V17	Vert. Osc. & Amp.	6SN7GT	6SN7GT	8BD	
V18	Horiz. Phase Det	6AL5	6AL5	6BT	
V19	Horiz. Mult.	12AU7	12AU7	9A	
V20	Horiz. Output	6BG6G	6BG6G	5BT	
V21	Damper	6W4GT	6W4GT	4CG	
V22	H.V. Rect.	1B3/8016	1B3/8016	3C	
V23	L.V. Rect.	6X5GT	6X5GT	6S	
V24	L.V. Rect.	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: SYLVANIA PART No.	REPLACEMENT DATA: THOMAS PART No.	RTMA BASE TYPE	NOTES
V25	12LP4	12LP4A	12LP4A ①		① Use single Magnet Ion Trap

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	W508072	AFH3-44		UPT44445		TVL-3787	▲Filter
B	40	450							■ Filter
C	40	450							▲Decoupling
C2A	20	300	W508073	AFH2-60		UPT62130		TVL-2582	■Filter
B	60	300							▲Filter
C3	40	300	W160095	PRS450/40		BR4035A		TVA-1611	Filter
C4A	20	450	W508074	AFH4-65		UPT21145		TVL-3780	▲Decoupling
B	10	450				C10		TVA-1207	■ Vert. Amp. Decoupling
C	10	450							▲ Vert. Osc. Decoupling
D	100	25							Vert. Amp. Cathode
C5	4	450	W504719	PRS450/4		BR445		TVA-1702	Audio Output Plate
C6	4	450	W504719	PRS450/4		BR445		TVA-1702	Audio Output Screen
C7	50	25	W502527	PRS25/50		BR502A		TVA-1206	Audio Output Cathode
C8	10	150	W505174	PRS150/12		BR1015		TVA-1406	Dyn. Limiter Cap.
C9	4	150	W502547	PRS150/4		BR415		TVA-1402	Stabilizing
C10	15		W508569	SI15	D6-150		GP1K-150	5GA-Q15	RF Coupling
C11A	1000		W508576	BPD-2X001	DD-2-102		812-001	5HK-2D1	RF Amp. Plate Dec.
B	1000								Conv. Fil.
C12	680		W508570	SI680	D6-681		GP2K-681	5GA-T68	RF Amp. Screen
C13	470		W508572	SI470	D6-471		GP2K-471	5GA-T47	Fixed Trimmer
C14	.25		W508573				NP0K-R25		RF Coupling
C15	.5		W508574		TCZ-.5		NP0K-R50		RF Coupling
C16	1.8		W508575				NP0K-1R8		RF Coupling
C17	470		W508572	SI470	D6-471		GP2K-471	5GA-T47	Fixed Trimmer
C18	3		W508557				N330K-030		Osc. Feedback
C19	10		W508571	SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Osc. Grid Cap.
C20	10		W508571	SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C21	1000		W513009	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C22	220		W513005	SI220	D6-221	5W5T25	GP2K-221	5GA-T22	IF Coupling
C23	1000		W513009	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C24	1000		W513009	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	1st Video IF Dec.
C25	240	500	W512532	1469-00025		5R5T25			Fixed Trimmer
C26	1000		W513009	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	1st Video IF Fil.
C27	82		W513016	SI82			GP1K-820		IF Coupling
C28	1000		W513009	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C29	1000		W513009	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	2nd Video IF Dec.
C30	1000		W513009	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	2nd Video IF Fil.
C31	82		W513016	SI82			GP1K-820		IF Coupling
C32	1000		W513009	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C33	1000		W513009	SI1000	D6-102	1W5D1	GP2K-102	5HK-D1	3rd Video IF Dec.
C34	1000		W513009	SI1000	D6-102	1W5D1	GP2K-102	5HK-D1	3rd Video IF Fil.
C35	82		W513016	SI82			GP1K-820		IF Coupling
C36	1000		W513009	SI1000	D6-102	1W5D1	GP2K-102	5HK-D1	4th Video IF Dec.
C37	1000		W513009	SI1000	D6-102	1W5D1	GP2K-102	5HK-D1	4th Video IF Fil.
C38	5000		W513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Video Det. Fil.
C39	5		W513432	SI5NP0	TCZ-4.7		NP0K-050		Video Det. Filter
C40	.25	200	W512045	P488-25		GT2P25		2TM-P25	Video Amp. Screen
C41	100		W513003	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	Video Coupling
C42	.1	200	W512003	P288-1	DF-104	PTE4P1		2TM-P1	Video Coupling
C43	.05	200	W512027	P288-05	DF-503	PTE4S5		2TM-S5	Video Coupling
C44	.05	600	W512031	P688-05	DF-503	PTE6S5		6TM-S5	Video Coupling
C45	.05	600	W512031	P688-05	DF-503	PTE6S5		6TM-S5	Video Coupling
C46	.05	200	W512027	P288-05	DF-503	PTE4S5		2TM-S5	AGC Filter
C47	.25	200	W512045	P488-25		GT2P25		2TM-P25	AGC Filter
C48	2.2		W513001	SI2.2NP0	TCZ-2.2		NP0K-2R2		Sound IF Coupling
C49	5000		W513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st Sound IF Dec.
C50	5000		W513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st Sound IF Grid Dec.

TV PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C51	1000		W513009	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	1st Sound IF Fil.
C52	47		W513433	SI47N750	TCN-47		N750K-470	5TCU-Q47	Sound IF Coupling
C53	5000		W513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd Sound IF Dec.
C54	220		W513018	SI220	D6-221	5W5T25	GP2K-221	5GA-T22	2nd Sound IF Grid Dec.
C55	5000		W513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2ndSound IF Fil.
C56	5000		W513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Decoupling
C57	1000		W513009	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	Sound IF Coupling
C58	1500		W513010	SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	RF Bypass
C59	220	500	W512527	1468-00025	D6-221	5W5T25	GP2K-221	1FM-325	RF Bypass
C60	1500		W513010	SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	De-emphasis
C61	.05	200	W512027	P288-05	DF-503	PTE4S5		2TM-S5	Audio Coupling
C62	.005	600	W512007	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Tone Comp.
C63	.005	600	W512007	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C64	270		W513006	SI270	D6-271	5W5T3	GP2K-271	5GA-T27	AF Amp. Plate
C65	.005	600	W512007	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C66	.01	600	W512013	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Tone Comp.
C67	.002	600	W512003	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Audio Output Plate
C68	.25	600	W512045	684-25		GP6P25		6TM-P25	Sync. Coupling
C69A	.01		W508062 ♦	P688-01	DD-103	PTE6S1	GP2-333-103	5HK-S1	Vert. Sync. Coupling
B	.002			P688-002	PC-100 ‡	PTE6D2	GP2-333-202	101C1 ¶	Vert. Integrator Net.
C	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Net.
D	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Net.
C70	4700	500	W512533	1464-005		1DR5D5		MS-25	Vert. Osc. Grid Cap.
C71	.1	600	W512306	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Discharge
C72	.15	600	W512037	684-15					Vert. Sweep Coupling
C73	.02	600	W513019	P688-02	DF-203	PTE6S2		6TM-S2	Vert. Sweep Coupling
C74	.05	600	W512031	P688-05	DF-503	PTE6S5		6TM-S5	Integrator Net.
C75	1000		W513009	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	Horiz. Sync. Coupling
C76	1000		W513009	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	Horiz. Sync. Coupling
C77	.01	600	W512013	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Voltage Divider
C78	5000		W513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AFC Filter
C79	.05	200	W512027	P288-05	DF-503	PTE4S5		2TM-S5	AFC Filter
C80	3300	500	W512531						Fixed Trimmer
C81	330		W513007	SI330	D6-331		GP2K-331	5GA-T33	Horiz. MV Feedback
C82	390	500	W512535	1469-0004		5R5T4		MS-34	Horiz. Discharge
C83	270	500	W512536	1468-0003	D6-271	5W5T3	GP2K-271	MS-33	Horiz. Sweep Coupling
C84	.05	600	W512031	P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Output Screen
C85	.25	400	W512047	P488-25		GT4P25		4TM-P25	Horiz. Output Cathode
C86	10	1500	W512537						Horiz. Feedback
C87	.05	600	W512031	P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Feedback
C88	.02	600	W512015	P688-02	DF-203	PTE6S2		6TM-S2	Fixed Trimmer
C89	.25	600	W512049	684-25		GT6P25		6TM-P25	Horiz. Sweep Coupling
C90	.15	200	W512039	P288-15				2TM-P15	Damper Filter
C91	.05	400	W512027	P488-05	DF-503	PTE4S5		4TM-S5	Damper Filter
C92	.25	600	W512049	684-25		GT6P25		6TM-P25	Damper Filter
C93	500	20000	W513021	HV20A	TV1-502		410-501		HV Filter
C94	220		W513018	SI220	D6-221	5W5T25	GP2K-221	5GA-T22	Fil. Bypass
C95	.01	400	W512255	P488-01	D6-103	PTE4S1	GP2-333-103	6TM-S1	Line Filter
C96	.01	400	W512255	P488-01	D6-103	PTE4S1	GP2-333-103	6TM-S1	Line Filter
C97	47			SI47	D6-470		GP1K-470	5GA-Q47	Horiz. Output Fil.

♦ Items C69A, C69B, C69C, C69D, R73A, R73B, R73C are combined in one unit.
‡ Replaces Vert. Integrator Net. Install DD-103 in series with PC-100 input lead.
¶ Replaces Vert. Integrator Net. Install 5HK-S1 in series with 101C1 input lead.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	½		Q13-137X	AK-98	ANT-73	Volume Control and Switch tapped ⓐ 250KΩ
B	Shaft		W508182	RQ	FKS-1/4	AK-1	Attach to R1A per instructions.
C	Switch			76-1	SW-B	K-155	Attach to R1A per instructions.
R2A	50KΩ	½	W508056	Q11-123	AG-44-S	AN-31	Brightness Control
B	Shaft			Not Req.	KSS-3	AK-4	Attach to R2A per instructions
R3A	3000Ω	4	W508457				Contrast Control-Panel-Wire Wound
B	500KΩ	1/4					Tone Control-Rear
R4A	2.5Meg	½	W508455	Q11-239	AG-84-S	B-83	Height Control
B	Shaft			C3 #	KSS-5	AK-16 #	Attach to R4A per instructions.
R5A	1Meg	½	W508445	Q11-137	AG-61-S	AN-69	Vertical Hold Control
B	Shaft			Not Req.	KSS-5	AK-4	Attach to R5A per instructions.
R6A	6000Ω	½	W508453		AM-23-S	AN-13	Vertical Linearity Control
B	Shaft				KSS-5	AK-3 AK-16#	Attach to R6A per instructions.
R7A	50KΩ	½	W508056	Q13-123	AG-44-S	AN-31	Horizontal Hold
B	Shaft			C3#	KSS-3	AK-4	Attach to R7A per instructions.
R8	5500Ω	4	W508456				Focus Control-Wire Wound

Use Coupler with Part of Original Shaft

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SILVERTONE PART No.	IRC PART No.	IDENTIFICATION CODES All resistors ± 10% unless otherwise specified	
R9	4700Ω	½	W510148	BTS-4700	Antenna Loading	See note 1.
R10	1000Ω	½	W510136	BTS-1000	RF Amplifier Grid	See note 2.
R11	2200Ω	½	W510142	BTS-2200	RF Amplifier Screen	See note 3.
R12	18KΩ	½	W510159	BTS-18K	RF Coil Shunt	See note 4.
R13	220KΩ 20%	½	W510179		Mixer Grid	See note 5.
R14	15KΩ 20%	½	W510158		Mixer Plate	
R15	22KΩ	½	W510160		Oscillator Grid	
R16	4700Ω	½	W510148	BTS-4700	Oscillator Plate	
R17	1000Ω 20%	½	W510137	BTS-1000	AGC Network	
R18	6800Ω	½	W510151	BTS-6800	1st Video IF Grid	
R19	82Ω	½	W510117	BTS-82	1st Video IF Cathode	
R20	1000Ω 20%	½	W510137	BTS-1000	1st Video IF Decoupling	
R21	1000Ω 20%	½	W510137	BTS-1000	AGC Network	
R22	8200Ω	½	W510153	BTS-8200	2nd Video IF Grid	
R23	82Ω	½	W510117	BTS-82	2nd Video IF Cathode	
R24	1000Ω 20%	½	W510137	BTS-1000	2nd Video IF Decoupling	

TV PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES
R35	1000Ω 20%	½	W510137	BTS-1000	AGC Network
R26	4700Ω	½	W510148	BTS-4700	3rd Video IF Grid
R27	82Ω	½	W510117	BTS-82	3rd Video IF Cathode
R28	1000Ω 20%	½	W510137	BTS-1000	3rd Video IF Decoupling
R29	8200Ω	½	W510153	BTS-8200	3rd Video IF Coil Shunt
R30	68Ω 20%	½	W510116		4th Video IF Cathode
R31	1000Ω 20%	½	W510137	BTS-1000	4th Video IF Decoupling
R32	8200Ω	½	W510153	BTS-8200	4th Video IF Coil Shunt
R33	6800Ω	½	W510151	BTS-6800	4th Video Amplifier Grid
R34	8200Ω	1	W510253	BTA-8200	4th Video Amplifier Screen
R35	10KΩ	1	W510254	BTA-10K	Bleeder
R36	47KΩ	½	W510166	BTS-47K	Peaking Coil Shunt
R37	5600Ω	½	W510150	BTS-5600	Video Peaking
R38	5600Ω	½	W510150	BTS-5600	Video Amplifier Plate
R39	1Meg	½	W510190	BTS-1Meg	Video Amplifier Grid
R40	12KΩ	2	W510356	BTB-12K	Video Amplifier Cathode
R41	1Meg 20%	½	W510191	BTS-1Meg	Video Output Grid
R42	270Ω	½	W510138	BTS-270	Video Output Cathode
R43	12KΩ 5%	½	W510723	BTS-12K 5%	Peaking Coil Shunt
R44	1500Ω	2	W510339	BTB-1500	Video Output Plate
R45	1500Ω	2	W510339	BTB-1500	Video Output Plate
R46	220KΩ 20%	½	W510179	BTS-220K	Video Peaking
R47	1Meg 20%	½	W510191	BTS-1Meg	Picture Tube Grid
R48	100KΩ 20%	½	W510173	BTS-100K	Picture Tube Grid
R49	82KΩ	½	W510171	BTS-82K	Voltage Divider
R50	15KΩ	½	W510157	BTS-15K	Voltage Divider
R51	22KΩ 20%	½	W510161	BTS-22K	Voltage Divider
R52	2200Ω 20%	½	W510143	BTS-2200	Vertical Integrator
R53	82Ω	½	W510117	BTS-82	1st. Sound IF Cathode
R54	1000Ω 20%	½	W510137	BTS-1000	1st. Sound IF Decoupling
R55	470KΩ 20%	½	W510185	BTS-470K	2nd. Sound IF Grid
R56	82Ω	½	W510117	BTS-82	2nd. Sound IF Cathode
R57	1000Ω 20%	½	W510137	BTS-1000	2nd. Sound IF Decoupling
R58	22KΩ	½	W510160	BTS-22K	De-emphasis
R59	18KΩ	½	W510159	BTS-18K	Ratio Detector Diode Load
R60	18KΩ	½	W510159	BTS-18K	Ratio Detector Diode Load
R61	33KΩ	½	W510163	BTS-33K	Dynamic Limiter Diode Load
R62	68KΩ 20%	½	W510170	BTS-68K	Tone Compensation
R63	10Meg 20%	½	W510197	BTS-10Meg	Audio Amplifier Grid
R64	470KΩ 20%	½	W510185	BTS-470K	Audio Amplifier Plate
R65	330Ω	1	W510227	BTA-330	Audio Output Cathode
R66	8200Ω	½	W510153	BTS-8200	Decoupling
R67	560Ω	2	W510333	BTB-560	Focus Coil Shunt
R68	33KΩ 20%	½	W510164	BTS-33K	Isolation
R69	270KΩ	½	W510180	BTS-270K	Sync. Clipper Grid
R70	330KΩ	½	W510181	BTS-330K	Sync. Clipper Plate
R71	1800Ω 5%	½	W510141	BTS-1800K 5%	Sync. Phase Inverter Cathode
R72	1800Ω 5%	½	W510141	BTS-1800 5%	Sync. Phase Inverter Plate See Note 6
R73A	22KΩ	1/5		BTS-22K	Integrator Network
B	8200Ω	1/5	W508062	BTS-8200	Integrator Network
C	8200Ω	1/5		BTS-8200	Integrator Network
R74	1Meg	½	W510190	BTS-1Meg	Vertical Oscillator Grid
R75	1.5Meg 20%	½	W510192	BTS-1.5Meg	Vertical Oscillator Plate
R76	6.8Meg 20%	½	W510196	BTS-6.8Meg	Bias Network
R77	100KΩ	½	W510172	BTS-100K	Bias Network
R78	56KΩ	2		BTB-56K	Vertical Oscillator Decoupling
R79	3300Ω	½	W510145	BTS-3300	Vertical Peaking
R80	2.2Meg 20%	½	W510193	BTS-2.2Meg	Vertical Output Grid
R81	560Ω	½	W510132	BTS-560	Vertical Output Cathode
R82	2700Ω	1	W510244	BTA-2700	Vertical Output Decoupling
R83	100KΩ	½	W510172	BTS-100K	Horizontal Phase Detector Diode Load
R84	100KΩ	½	W510172	BTS-100K	Horizontal Phase Detector Diode Load
R85	4.7Meg	½	W510195	BTS-4.7Meg	Horizontal Phase Detector Diode Load
R86	470KΩ 20%	½	W510185	BTS-470K	Horizontal AFC Filter
R87	27KΩ	½	W510152	BTS-27K	Horizontal AFC Filter
R88	1500Ω	½	W510139	BTS-1500	Horizontal MV Cathode
R89	5600Ω	½	W510150	BTS-5600	Horizontal MV Plate
R90	150KΩ	½	W510175	BTS-150K	Horizontal MV Grid
R91	270KΩ	½	W510180	BTS-270K	Horizontal MV Plate
R92	6Ω	½	W510115		Parasitic Suppressor
R93	1Meg 20%	½	W510191	BTS-1Meg	Horizontal Output Grid
R94	82Ω	2	W510317		Horizontal Output Cathode
R95	4700Ω	1	W510248	BTA-4700	Horizontal Output Screen
R96	22KΩ 20%	1	W510261	BTA-22K	Horizontal MV Decoupling
R97	10KΩ	1	W510154	BTA-10K	Horizontal AFC Filter
R98	10KΩ 20%	½	W510155	BTS-10K	AGC Network
R99	100KΩ 20%	½	W510173	BTS-100K	AGC Network
R100	3.3Ω	½	W510725		HV Rectifier Filament
R101	1Meg	2	W510321		HV Filter
R102	15KΩ	10	W510728		1 3/4A-15K Damper Shunt Wire-Wound
R103	3.3Ω	½	W510725		BW-½-3.3 Series Dial Light
R104	3.3Ω	½	W510725		BW-½-3.3 Series Dial Light
R105	7500Ω	5	W510727		1 3/4A-7500 Voltage Divider Wire-Wound
R106	850Ω	5	W510726		1 3/4A-900 Filter Wire-Wound
R107	100Ω	2	W510319		BW-2-100 Surge Limiter
R108	650Ω	10	W510733		1 3/4A-700 Voltage Dropping Wire-Wound

Note 1: Some models may use a 150Ω resistor in this application.
Note 2: Some models may use a 2200Ω resistor in this application.
Note 3: Some models may use a 4700Ω resistor in this application.
Note 4: Not used in all models.
Note 5: Some models may use a 270KΩ resistor in this application.
Note 6: Some models may use a 2700Ω relsitor in this application.
♦ Items C69A, C69B, C69C, C69D, R73A, R73B, and R73C are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.
T1	117VAC @1.85A	680VCT .205ADC 320VCT .055ADC	5VAC @3.0A	6.3VAC @10A	W508080	P-8160		TP-375

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.	NOTES
T2	120Ω	1200Ω	W508078	A-8111 ①	A-3000 ①	TS0-1 ① TFB-3	Vert. Blocking Osc. Trans Horizontal Output
T3	475Ω tapped @180Ω	11Ω tapped @.9Ω SEC.2 0Ω	W508058				
T4	1350Ω	12.5Ω	W508059	A-8112	A-3036	TS0-5①	Vert. Output Trans.
T5A	13Ω		W507791				Horiz. Deflection Coils
B	58Ω						Vert. Deflection Coils
T6	1000Ω		W508065		MF-4 ②		Focus Coil

① Drill One New Mounting Hole.
② Fabricate New Mounting Bracket.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.	INSTALLATION NOTES
L1	.205A	65Ω	2.7H.	W508341	C-2326 ①	C-2996	TR-3300①	① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA IRC PART No.	NOTES
L2	Ant. Coil	.2Ω	.1Ω	W508553			
L3	Ant. Coil	.2Ω	.1Ω	W508552			
L4	Fil. Choke	.22Ω		W507587		CLA	.47 Microhenries
L5	RF Coil	0Ω		W508554			
L6	Mixer Grid Coil	0Ω					
L7	Osc. Coil	0Ω		W508558			Channel 6
L8	Osc. Coil	0Ω		W508560			Channel 13
L9	1st Video IF	.6Ω		W508555			
L10	Fil. Choke	0Ω		W507584			
L11	Cath. Choke Trap	0Ω		W507567			
L12	2nd Video IF	.1Ω		W507343			Less Slug
L13	3rd Video IF	.1Ω		W507343			Less Slug
L14	Fil. Choke	0Ω		W507584			
L15	4th Video IF	.1Ω		W507343			Less Slug
L16	RF Choke	2.4Ω		W507367			
L17	Fil. Choke	.22Ω		W507587		CLA	.47 Microhenries
L18	5th Video IF	.1Ω	2.4Ω	W507591			
L19	Fil. Choke	.8Ω		W507586		CLA	1 Microhenries
L20	Peaking Coil	22Ω		W507374			400Microhenries
L21	Peaking Coil	22Ω		W507374			400 Microhenries
L22	Peaking Coil	4.5Ω		W508069			190Microhenries
L23	Peaking Coil	5.5Ω		W508070			216Microhenries
L24	1st Sound IF	2.2Ω	2.2Ω	W508061			
L25	RF Choke	14.5Ω		W507373			
L26	2nd Sound IF	2.2Ω	2.2Ω	W508061			
L27	Fil Choke	.8Ω		W507586		CLA	1 Microhenry
L28	Ratio Det. Trans.	5.9Ω	.2Ω	W507321			Tap at .8Ω
L29	RF Choke	14.5Ω		W507373			
L30	Horiz. Osc.	70Ω		W508077			Less Slug
L31	Width Coil	.6Ω	4.1Ω	W508218			
L32	Horiz. Lin.	1.6Ω	4.1Ω	W162056			

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA SILVERTONE PART No. FUSE	REPLACEMENT DATA SILVERTONE PART No. HOLDER	REPLACEMENT DATA LITTELFUSE PART No. FUSE	REPLACEMENT DATA LITTELFUSE PART No. HOLDER	REMARKS
M1	3AG	1/4A	W508063		318.250		

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA SILVERTONE PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	SHURE PART No. CARTRIDGE	SHURE PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M2		ACD-J	A-1 A-3	W22AB	A65MG A62A	96-T	0-1 or 8-1 and 0-3 or 8-3	

ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA WALCO PART No.	REMARKS
M3		W-29MGS and W-29A	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA SILVERTONE PART No.	NOTES
M4	Bayonet	6-8	.15	Brown	W118921	Type No. 47
M5	Bayonet	6-8	.15	Brown	W118921	Type No. 47
M6	Bayonet	6-8	.15	Brown	W118921	Type No. 47
M7	Bayonet	6-8	.15	Brown	W118921	Type No. 47

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M8	RF Tuner	W508431	Complete with tubes
M9	Switch	W508458	Function includes Volume control & On/Off Switch
M10	Ion Trap	W506803	
B2	Trimmer	W508071	Horiz. Drive (10-160MMF)
	Knob	W502563	Ant. Built In
	Knob	W507894	TV Fine Tuning
	Knob	W507895	Channel Selector
	Knob	W508473	Band Switch
	Knob	W508474	Off/On Volume
	Knob	W508475	Horiz. Hold & Brightness
	Knob	W508476	Contrast
	Knob	W508477	Tone

RADIO PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V26	FM RF Amp.-Mixer	12AT7	12AT7	9A	
V27	FM Osc.-AM Converter	6BE6	6BE6	7CH	
V28	1st. IF Amp.	6BA6	6BA6	7BK	
V29	2nd. FM IF Amp. - AM Det.-AVC	6BA6	6BA6	7BK	
V30	Ratio Det.	6AL5	6AL5	6BT	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA AEROVOX PART No.	REPLACEMENT DATA CENTRALAB PART No.	REPLACEMENT DATA CORNELL-DUBILIER PART No.	REPLACEMENT DATA ERIE PART No.	REPLACEMENT DATA SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C98	3	50	W507946	PRS150/4		BR550		TVA-1303	Stabilizing
C99	10		W513038	SII0	D6-100	5W5Q1	GP1K-100	5GA-Q1	FM RF Coupling
C100	1000		W513009	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	FM RF Amp. Grid
C101	1000		W513009	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	FM RF Amp. Fil.
C102	330		W513007	SI330	D6-331		GP2K-331	5GA-T33	FM RF Coupling
C103	1000		W513009	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	FM RFCoupling
C104	1		W513000		TCZ-1		NP0K-010		FM Osc. Coupling
C105	5000		W513015	BPD-005	DD-502	1D5D5	811-005	5HK-D1	AM Conv. Dec.
C106	47		W513002	SI47	D6-470	5W5Q5	GP1K-470	5GA-Q47	Osc. Grid Cap.
C107	47		W513002	SI47	D6-470	5W5Q5	GP1K-470	5GA-Q47	Osc. Coupling
C108	2.5		W513436				N470K-2R5		Osc. Feedback
C109	2.2		W513001	SI2.2NP0	TCZ-2.2		NP0K-2R2		Osc. Feedback
C110	1000		W513009	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AM Conv. Fil.
C111	5000		W513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. IF Amp. Dec.
C112	5000		W513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. IF Amp. Fil.
C113	5000		W513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C114	5000		W513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. FM IF Amp. Dec.
C115	5000		W513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. FM IF Amp. Fil.
C116	5000		W513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Ratio Det. Fil.
C117	330		W513007	SI-330	D6-331		GP2K-331	5GA-T33	RF Bypass
C118	330		W513007	SI-330	D6-331		GP2K-331	5GA-T33	RF Bypass
C119	.001	400	W512103	P688-001	D6-102	PTE5D1	GP2L-102	6TM-D1	De-emphasis
C120A	100		† W506338	SII00	† PC-50	5W5T1	GP1K-101	† 100C1	Det. RF Filter
B	100			SII00		5W5T1	GP1K-101		Det. RF Filter
C121	.05	400	W512028	P488-05	DF-503	PTE4S5		4TM-S5	AVC Filter
C122	5000		W513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AVC Filter

† Items C 120A, C120B, R117 are combined in one unit.

SILVERTONE MODEL 133

RADIO PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	ALL RESISTORS ± 10% UNLESS OTHERWISE STATED
R109	220KΩ 20%	½	W510179	BTS-220K	Line Isolation
R110	100KΩ 20%	½	W510173	BTS-100K	FM-RF Amplifier Grid
R111	2.2Meg 20%	½	W510193	BTS-2.2Meg	FM Mixer Grid
R112	10KΩ 20%	½	W510155	BTS-10K	AM-FM Oscillator Grid
R113	6800Ω 20%	½	W510152	BTS-6800	Voltage Divider
R114	4700Ω 20%	1	W510249	BTA-4700	Voltage Divider
R115	3300Ω 20%	½	W510146	BTS-3300	AM-FM-IF Amplifier Decoupling
R116	3300Ω 20%	1	W510246	BTA-3300	Voltage Divider
R117	47KΩ	½	W506338 †	BTS-47K	Diode RF Filter
R118	470KΩ 20%	½	W510185	BTS-470K	Diode Load
R119	2.2Meg 20%	½	W510193	BTS-2.2Meg	AVC Network
R120	1500Ω 20%	1	W510240	BTA-1500	FM-IF Decoupling
R121	220Ω 20%	½	W510125	BTS-220	Balancing
R122	18KΩ	½	W510159	BTS-18K	De-emphasis
R123	10KΩ 20%	½	W510155	BTS-10K	Ratio Detector Diode Load
R124	10KΩ 20%	½	W510155	BTS-10K	Ratio Detector Diode Load

† Items C120A, C120B, and R117 are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T7	5.9KΩ	4.1Ω	660Ω	.8Ω	W-505912	A-3823	A-3019	R0-303	

SPEAKER

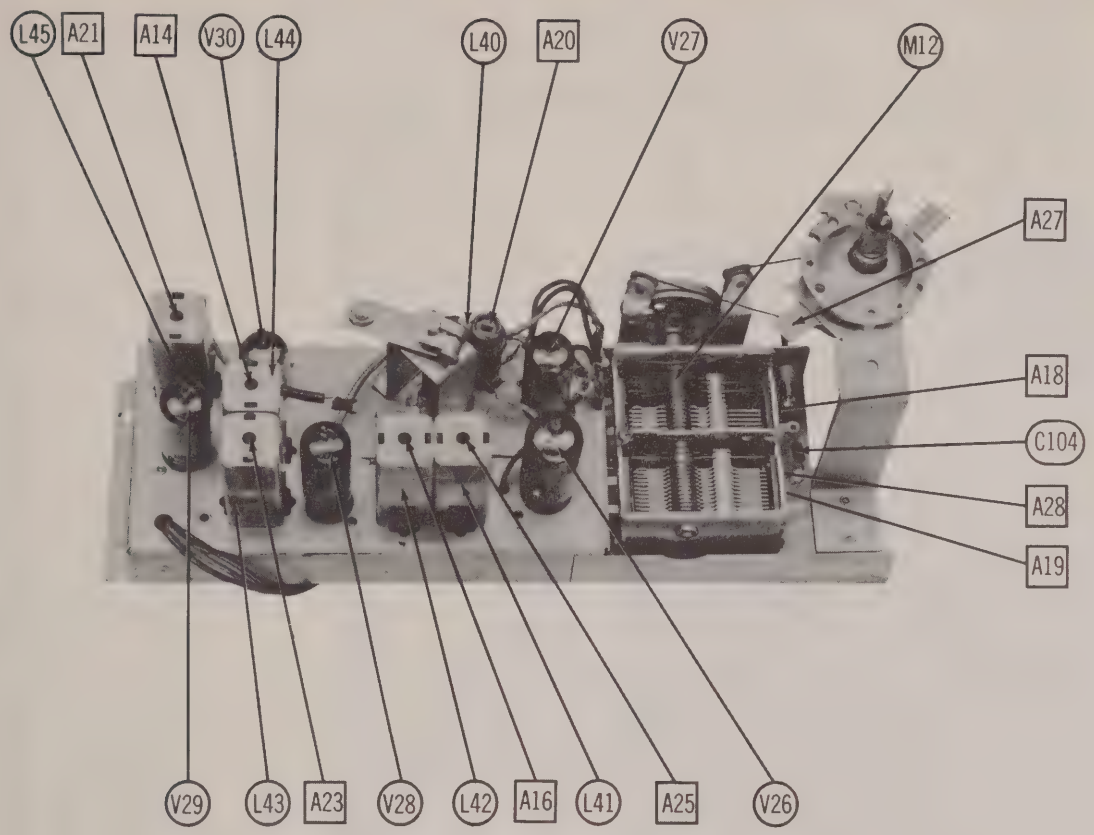
ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	SILVERTONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	P.M.	4.1Ω	W508174	ST-810 Mod. P69-U	69A2	
B			W508157			Used in chassis 100.107-1
	CONE DIA.	V. C. DIA.				
SP2A	6 in. X9 in.	3/4 in.				

COILS (RF-IF)

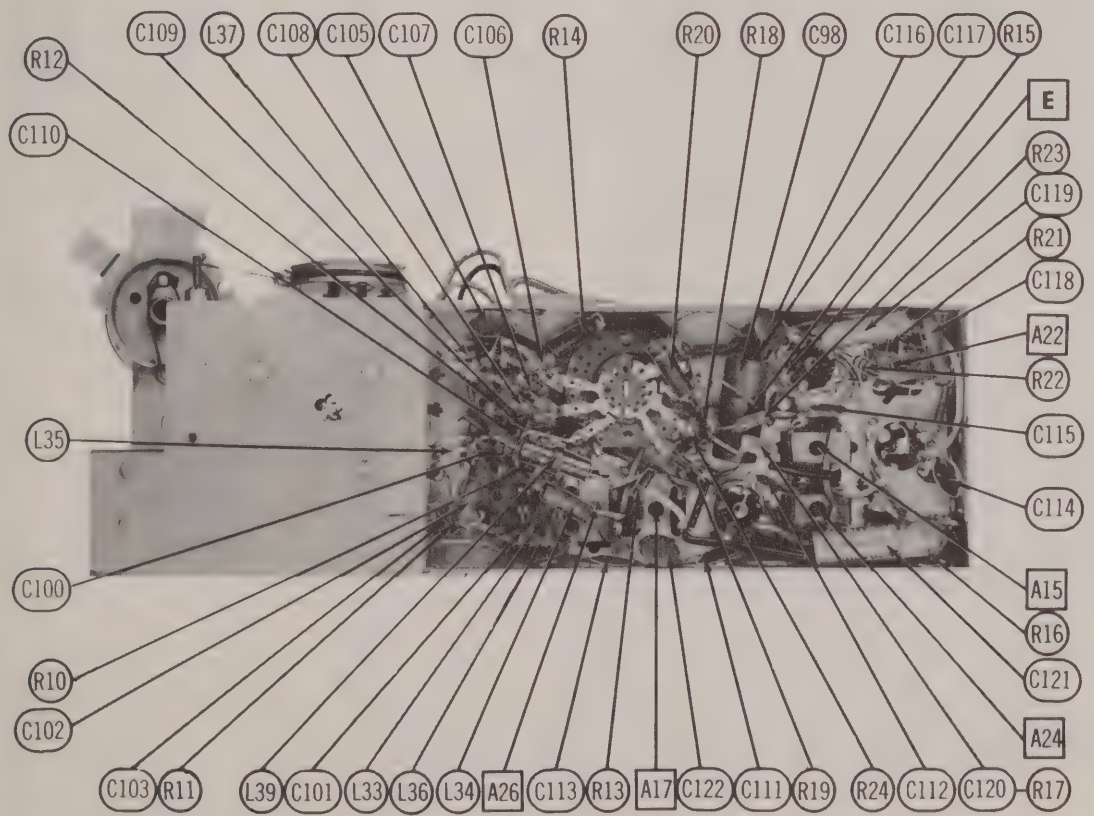
ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	SILVERTONE PART No.	MERIT PART No.	IRC PART No.	
L33	FM Ant. Coil	.8Ω		W507586		CLA	1Microhenry
L34	RF Choke	3Ω		W507935		CLA	3.3Microhenries
L35	FM RF Coil	0Ω		W507941			
L36	Parasitic Supp.	0Ω		W506581			Wound on 1K resistor
L37	FM Osc. Coil	0Ω		W507942			
L38	AM Loop Ant.	.2Ω		W508212			
L39	AM Ant. Coil	.2Ω	2.2Ω	W508184			
L40	AM Osc. Coil	7.5Ω		W508195			Tap at .8Ω
L41	1st. FM IF	.7Ω	.7Ω	W506080			
L42	1st. AM IF	21Ω	21Ω	W505867			
L43	2nd FM IF	1.8Ω	.5Ω	W505905			
L44	2nd AM IF	21Ω	21Ω	W505867			
L45	Ratio Det. Trans.	1.8Ω	.8Ω	W508179			Tap at .8Ω

MISCELLANEOUS

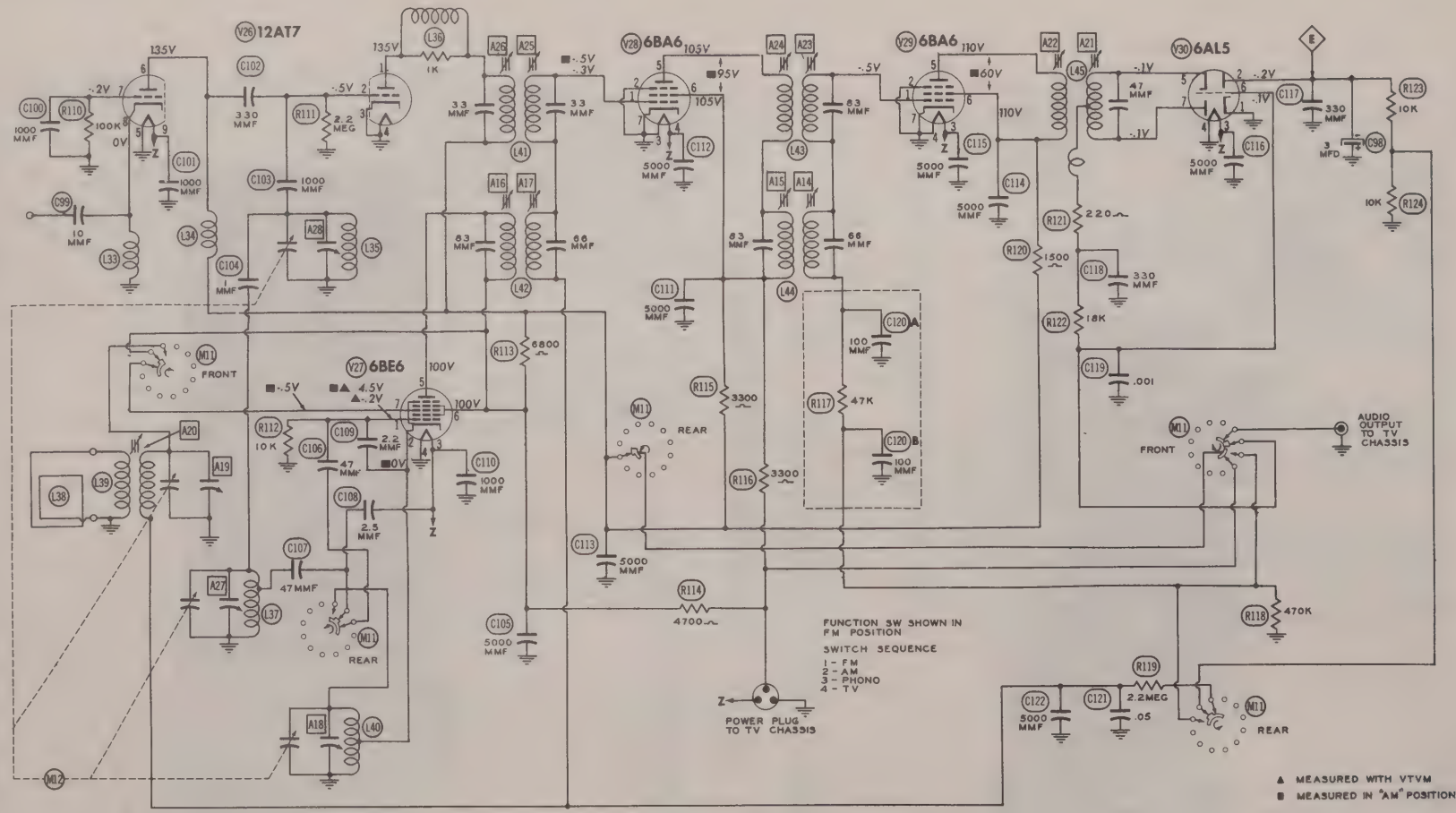
ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M11	Switch	W508185	Function (On AM-FM Chassis)
M12	Tuning Cap	W508186	(26-577MMF - 29 - 207MMF)
	Knob	W508471	AM-FM Coarse Tuning
	Knob	W508472	AM-FM Fine Tuning



RADIO CHASSIS-TOP VIEW



RADIO CHASSIS-BOTTOM VIEW



IF= 455 KC AM

IF= 10.7 MC FM

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V26	12AT7	¶950Ω	2.2Meg	0Ω	0Ω	0Ω	¶950Ω	100KΩ	.8Ω	.1Ω
V27	6BE6	.10KΩ	.8Ω	.1Ω	0Ω	¶4.7KΩ	¶4.7KΩ	■2.7Meg		
V28	6BA6	2.2Meg ■2.7Meg	0Ω	0Ω	.1Ω	¶2.6KΩ ¶■3.8KΩ	¶2.6KΩ ¶■3.6KΩ	0Ω		
V29	6BA6	515KΩ	0Ω	.1Ω	0Ω	¶2.4KΩ ¶■7.2KΩ	¶2.4KΩ ¶■7.2KΩ	0Ω		
V30	6AL5	0Ω	20KΩ	1Ω	0Ω	Inf.	Inf.	Inf.		

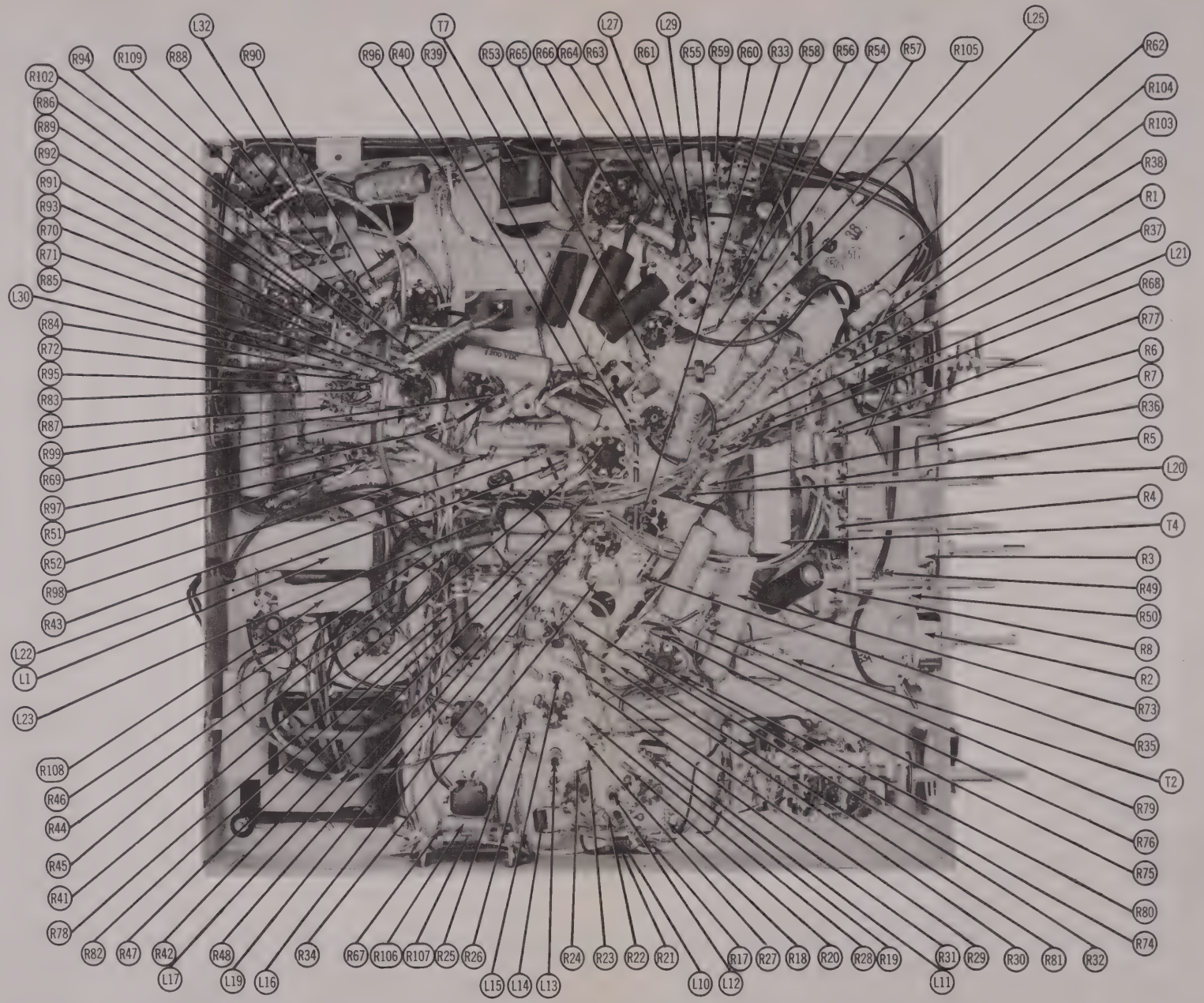
▲ TAKEN WITH VACUUM TUBE VOLTMETER
ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS NOTED
■ MEASURED IN "AM" POSITION
¶ MEASURED FROM PIN 8 OF V23

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

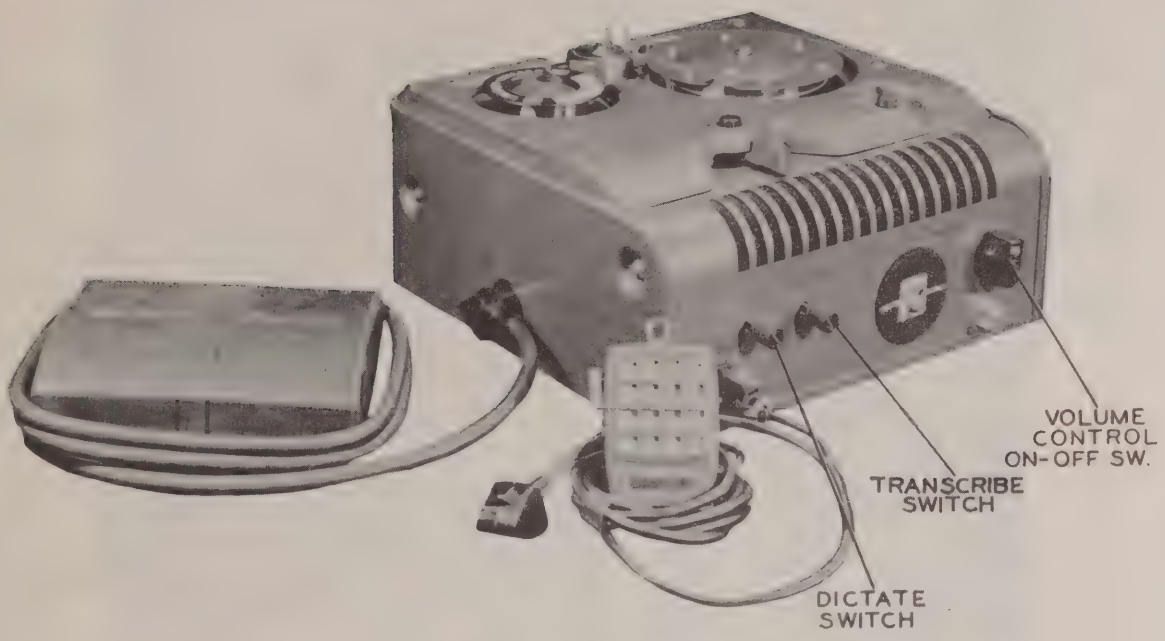
©Howard W. Sams & Co., Inc. 1952

RADIO SCHEMATIC



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

WEBSTER-CHICAGO
MODEL 228



WEBSTER-CHICAGO
MODEL 228

Figure 1

GENERAL INFORMATION

The Webster-Chicago Model 228 wire recorder is designed to magnetically Record and Reproduce on the standard .0036" stainless steel recording wire. In addition to being a complete wire recorder, Model 228 includes a foot switch to start, stop and reverse the mechanism for the convenience of recording or playing back recordings, dictation, etc. The microphone also included with the Model 228, has a built-in Start-Stop switch, which permits the user to control the machine conveniently.

The Elapsed Time Indicator incorporated in this machine is calibrated quarter minute and minute intervals. This Indicator makes a complete revolution in 15 minutes.

Model 228 is designed to operate on 105-120 volt 50/60 cycle AC. 50 Cycle current will cause the recorder to run a little slower but this will not harm the motor or impair the quality of the recorder.

Never attempt to operate from Direct Current (DC) or from a power supply with a frequency other than 50/60 Cycles.

Manufactured by:

Webster-Chicago
5610 Bloomingdale Ave., Chicago 39, Ill.

This material compiled and published by

HOWARD W. SAMS & CO., INC., INDIANAPOLIS, INDIANA

COPYRIGHT 1952 • ALL RIGHTS RESERVED

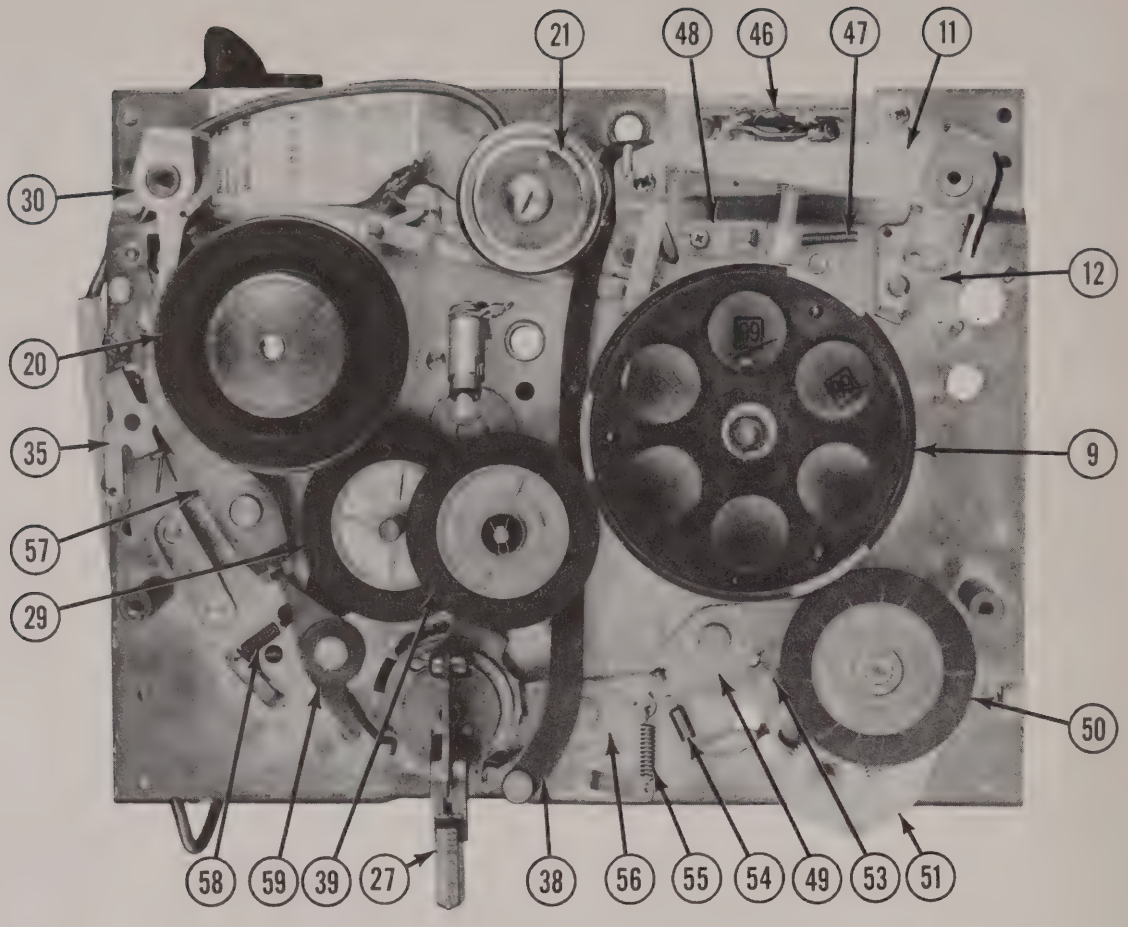


Figure 2

OPERATING INSTRUCTIONS

Making a Recording -

1. Place the recorder on a level table in order that the drive pulleys and brakes will operate properly.

2. Connect the power cord to an outlet supply 105-120 volts AC.

3. Place a spool of wire on the supply chuck (20). The spool should be placed label side up so that the wire will feed from the rear of the spool.

4. Rotate the takeup spool, by hand, until the recording head reaches the top of its vertical travel.

5. Pull the loose end of the thread leader past the recording head, through the grove in the takeup spool cover (6), and under the clip on this cover with a little spare. The clip may be loosened to permit the leader to slip under it by pressing on the button in the center of the takeup spool cover.

NOTE: Before making a recording on a new spool of wire, it is advisable to run the entire spool through the recorder once and rewind it. This is advisable for two reasons:

(a) The wire will then be wound on the spool in direct relation to the rise and fall of the recording head.

(b) The rewound spool will be somewhat more loosely wound and the free end may "tuck in" more securely.

6. Rotate the time indicator pointer (3) to the position marked 15.

7. Turn the "On-Off-Volume" control knob clockwise until a click is heard. This turns the unit on.

Use of the Microphone -

The microphone supplied with the Model 228 has a built-in Start-Stop switch whereby the dictation machine may be controlled in "Run" position only to start and stop the machine. This switch will operate for Dictation or Transcribe. In order for the microphone switch to operate, both plugs on the end of the microphone cord must be plugged into their proper sockets. The small plug in the Input socket and the large plug into the large socket on the side of the case.

1. To make a recording using the microphone, depress the Dictate push button.

2. Adjust the Volume control to a point where the neon Recording Level Indicator just flashes when you speak into the microphone.

3. Press down on the stop (25) and turn the control lever (27) to Run.

4. The recorder may now be started and stopped at any time by using the switch on the microphone,

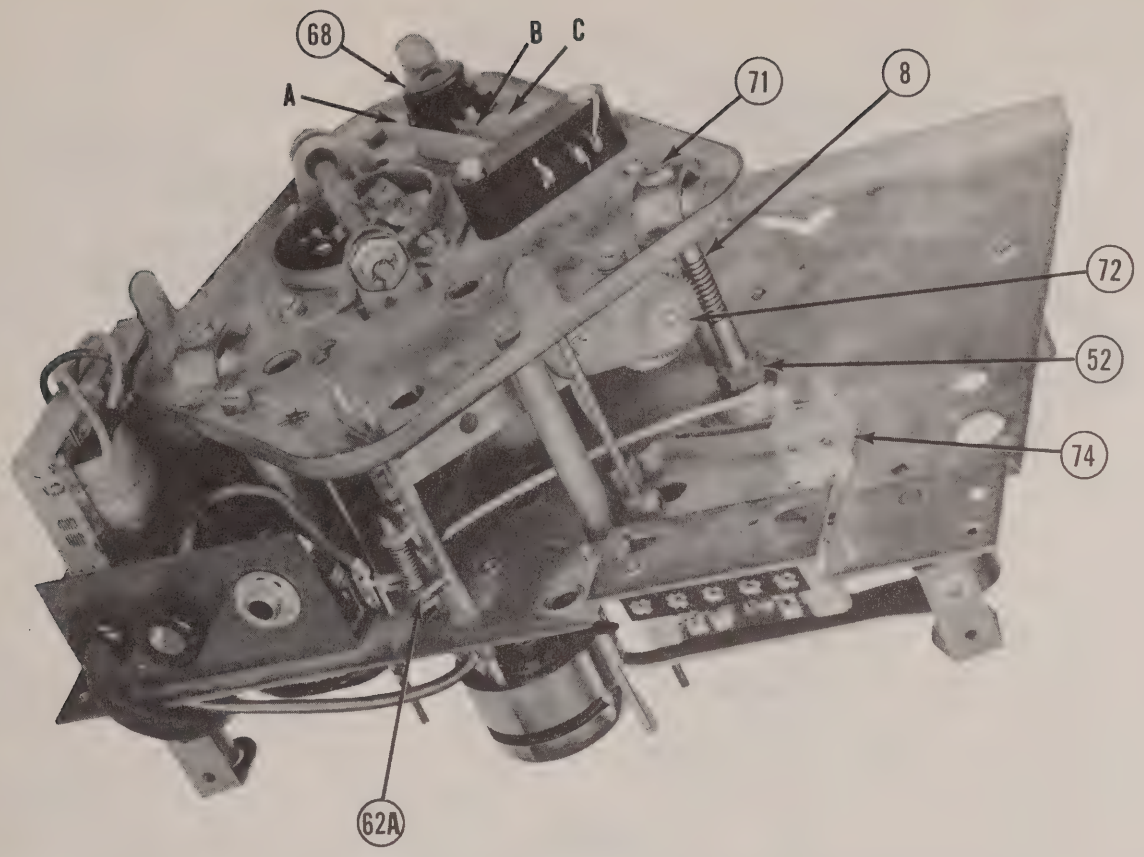


Figure 3

and whatever sound enters the microphone, while the machine is running, will be recorded on the wire.

Use of Foot Control Switch -

Model 228 includes a foot switch which may be used to "start" "stop" or "backspace" (rewind). To operate the foot switch insert its 3-prong plug into socket on the side of the case. Turn the control lever (27) to run. The "start" "stop" "rewind" operation will now be entirely controlled by the foot switch. When using the microphone with the foot switch, use only the small plug on the microphone cord which is inserted in Input socket. By pressing on the right side of the foot switch will start or stop the machine, pressing on the left side of the switch rewinds the wire. The Model 228 can be operated as a normal manually operated recorder to record or play back by removing the foot switch plug from the machine.

NOTE: It is not recommended to rewind an entire spool of wire using the foot switch. Hold down the lock (25) and turn the control lever (27) to "Rewind".

To Playback a Recording -

1. For playback, the wire is threaded exactly as for recording.

2. Depress the push button "Transcribe".

3. Push down on the lock (25) and turn the control lever (27) to run. This starts the wire moving. The microphone, when plugged in, will operate the machine for stopping or starting. The foot switch when used will start, stop, or rewind the wire. However, in each case for the wire to move the control lever (27) must be in Run position.

4. Adjust the Volume control to suit.

Erase -

If it becomes necessary to erase a recording without, at the same time, placing a new recording on the wire, the wire may be run through in the Run direction with the Volume control turned to minimum and the Dictate button depressed.

FUNCTION OF PRINCIPAL PARTS AND ADJUSTMENTS

Motor and Drive Wheel Assembly -

The motor (79) is mounted on the pivot bar (77) and is rocked forward by the cam follower (78A), which is riveted to the cover (78). The cam follower (78A) is actuated by the control lever (27) cam when the control lever (27) is turned to Run. This brings the motor shaft in to contact the idler wheel (39) which in turn drives the takeup drum (9) to wind the wire.

1. When the control lever (27) is in Stop position the control lever cam engages the cam follower just enough so the motor is held in a neutral position i. e. the motor shaft does not engage the idler wheel and the drive wheel, an the motor shaft is not touching the supply chuck.

When the control lever (27) is turned to Rewind the control lever cam is pivoted away from the cam follower (78B). The motor is then pulled back by its

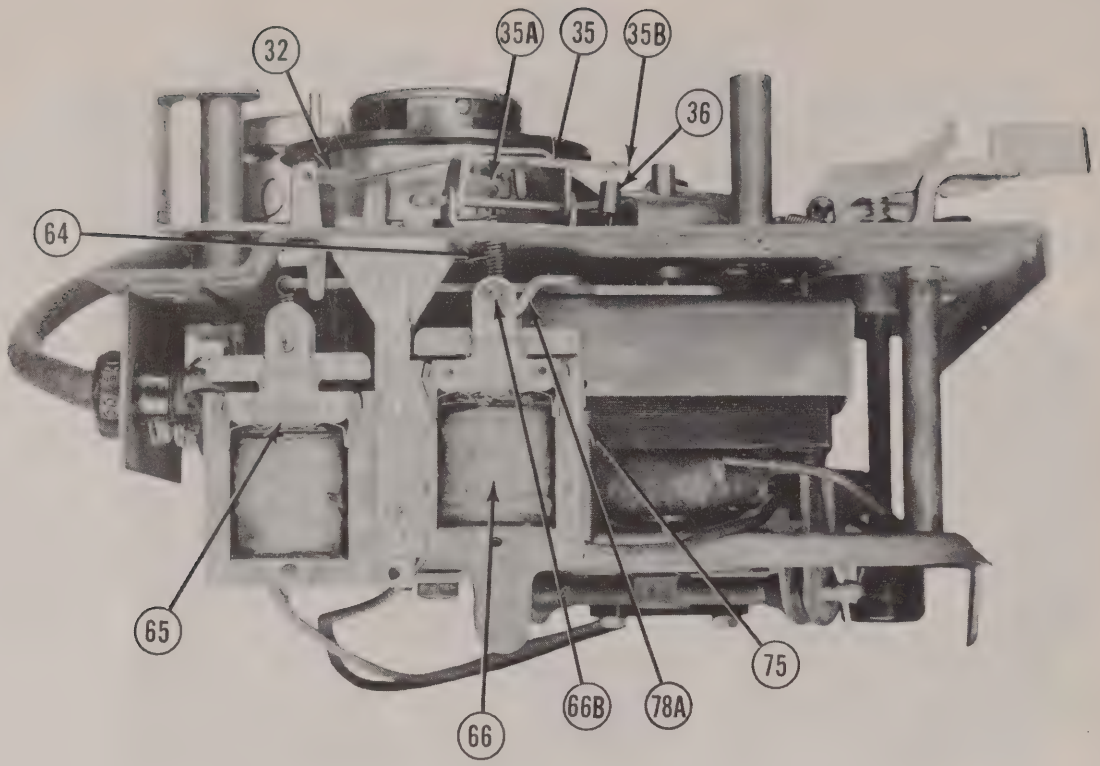


Figure 4

weight and the weight of solenoid (65) on the solenoid tilt arm (78A) plus the pull of the rewind tension spring (75). This brings the supply spool drive wheel (29) in contact with the supply chuck.

2. With the control lever (27) in the Stop position and the foot switch not plugged in, the space between the motor shaft and the idler wheel (39) and between the motor drive wheel (29) and the supply spool chuck (20) should be approximately equal 1/32". The position of the motor shaft is adjusted by bending the cam follower (78B) so it holds the motor in the proper position to insure the clearance desired.

3. With the control lever (27) in the "Run" position, the motor shaft should press against the idler wheel (39) which in turn engages the takeup drum (9). This engagement must be firm but not too tight.

To determine whether or not the motor shaft engagement is correct, check the mechanism as follows:

(a) Remove the retaining clip (41) and lift the idler wheel from its shaft.

(b) Move the control (27) to Run.

(c) Replace the idler wheel on its shaft with one side against the motor shaft and the other side resting on the edge of the takeup drum (9). The idler wheel should overlap the drum (9) about 1/32". This overlap is an indication of the pressure exerted on the idler by the motor shaft and on the drum chuck by the idler. If an adjustment is necessary bend the cam follower (78B).

The Brakes -

The brakes (57) and (49) are operated by the control lever (27) through the cam of the cam and link assembly (38) and the cam followers (56) and (59).

When the control lever (27) is turned to Run position, and the foot control or microphone not plugged in, the turned up end of the cam followers (56) and (59) will be positioned in the center of their relative brake arms (49) and (57). This removes all brake pressure to the brake arms (49) and (57) by the cam followers (56) and (59) and their connected springs (58) and (55). However a light brake pressure is applied to the takeup drum (9) and supply chuck (20) by springs (32) and (54) which are connected to their relative brake arms.

The light brake adjustment is very important when recording or playing back a recording. If the light brake pressure to the supply chuck is too light, the wire will be loose and jumpy and will wind uneven on the take up drum. Too heavy of a light brake pressure will cause slow starting when the foot switch is used.

When the control lever (27) is turned from Run to Stop position, the cam (38) is pivoted away from the cam followers (56) and (59). This allows the tension springs (55) and (58) to pull on the cam followers which in turn applies pressure on the brake arms (49) and (57). This stops the mechanism promptly and keeps the wire from unwinding. The heavy brake applied to the takeup drum prevents back lash.

When the control lever (27) is turned to Rewind the brake arm (57) is pivot completely away from the supply chuck (20). However the control cam moves the right cam follower (56) to the center of the slot in the takeup brake arm (49) thus allowing a light brake pressure to be applied to the takeup drum by the tension spring (54). Additional brake pressure is applied to the takeup drum by the relay switch arm (46). This prevent the wire from over riding when the wire

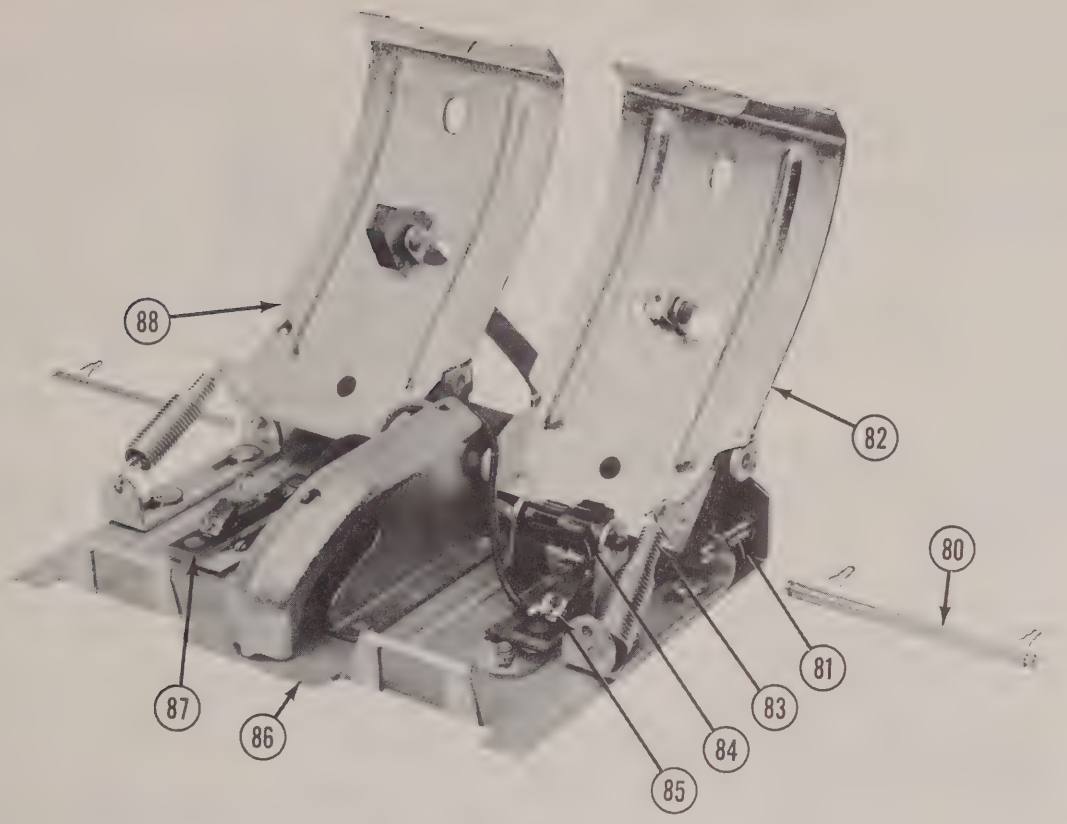


Figure 5

is rewinding at a high rate of speed.

Level Wind Adjustment -

The height of the takeup spool (7) and supply chuck (20) are adjusted by loosening the lock nuts (71) and turning the set screw, see Figure 4. The brass collars (52), (Figure 4) are set on the shaft beneath the top plate bearings to restrict the upward movement of the drum and chuck. The collar on the takeup drum shaft (9) is set so that the drum (9) is free to turn but has practically no vertical play. If the collar on the takeup drum is set too low, vertical play may cause poor rewind of the wire onto the supply spool. If set too high the drum will not turn freely. The setting of the collar on the supply spool chuck shaft should provide approximately 1/16" vertical play of the chuck.

In order to properly adjust the level wind -

1. Remove the recorder mechanism from the cabinet by removing the bottom cover and the four mounting screws from the side cover.

2. Place a one hour spool of wire on the supply chuck (20) and properly route the wire on the mechanism.

3. Turn the On-Off-Volume control switch on and move the control lever (27) to Run.

4. Check the mechanism occasionally to see how the wire is winding on the takeup spool. If wire begins to build up toward either flange of the takeup drum (7), adjust the head stroke adjustment screw (62A). Turning this screw clockwise raises the head, counter-clockwise lowers it. Rewind the wire then run it forward again, observing the way the wire winds on the takeup spool and adjust the head until the level wind is even on the drum. Location of screw (62A) is shown in Figure 4. This adjustment is made from the top of the mechanism. The screw is accessible through a hole in the baseplate just behind the recording head.

5. Rewind the wire and observe the way it winds on the supply spool. If the wire builds up at the top or bottom of the spool, loosen the hex nut (52) on the bottom of the supply shaft (23) and turn the set screw, then tighten the nut. Turning the set screw in raises the supply chuck, counter-clockwise lowers the chuck.

Forward and Reverse Solenoids -

1. Before any forward and reverse solenoid adjustment is made, be sure the manual operated drive mechanism is operating properly. See "Motor and Drive Wheel Assembly".

2. Remove the case from the recording unit.

3. Plug in the foot control switch.

4. Plug the line cord into an outlet supplying 117 Volts.

5. Turn the Volume-On-Off control switch On.

6. Turn the control knob (27) to Run.

After the recorder has been prepared as described in steps 1 through 6, the operation of the mechanism, may be observed and adjustments made as described in the following paragraphs:

Stop Position -

When solenoid (66) is energized (stop position) by the foot switch, the motor tilt lever (78A), (assembled to the motor cover), is pulled down thereby pulling the motor shaft away from the idler wheel (39).

(a) The space between the motor shaft and the idler wheel (39) should not be less than 1/64" and not more than 1/32".

(b) To obtain the correct spacing, bend the motor tilt lever (78A) up or down to increase or decrease the distance.

Forward Position -

When the switch is opened, the motor tilt lever (78A) is released by the solenoid (66), allowing the motor shaft to engaged the idler wheel (39) which in turn drives the takeup drum.

(a) Check the space between the solenoid anchor pin (66B), Figure 5 and the top of the motor tilt lever (78A). The anchor pin (66B) should clear the motor tilt lever by approximately 1/32".

(b) To obtain this demision, bend the lug, which is directly above the "T" plunger of the solenoid, up or down to obtain this 1/32" clearance.

NOTE: A heavy brake is applied against the supply spool brake shoe by the solenoid (66) and brake arm (35) when the foot switch stops the recorder. In the Run position a 1/16" to 3/32" clearance between the tip of the brake arm (36) and the brake shoe on the left brake arm (57) is required. This clearance of 1/64" when the control lever is in the Rewind position.

To Adjust -

(a) If the tension of spring (64) on the brake (35) is too light, the spool chuck will coast instead of stopping immediately. To correct this, bend the spring anchor arm (35A) to increase the spring tension. See Figure 5.

(b) If the tension of spring (64) on the brake arm (35) is too great, the solenoid will not be able to seat properly therefore, bend the anchor arm (35A) down slightly to lesson the spring tension.

(c) After the above adjustment is made turn the control knob to Rewind and check the clearance between the tip of the brake arm (35) and the brake shoe of the left brake arm (57). If there is not at least a 1/64" clearance between these two parts, bend the anchor arm (35B) up so as to increase the tension of spring (36).

Reverse Position -

The "Reverse" section of the foot control is a single pole double throw switch. In its normal position, the ground circuit to the rewind solenoid is open and the contact to transfer the "ground" to the Forward switch is closed.

While the Reverse control is held down the "ground" is removed from the Forward switch and the Reverse solenoid (65) is energized. The solenoids thereby pulls on the motor tilt arm (78A) which in turn engages the drive wheel (29) with the spool chuck (20). The motor tilt lever (78A) also pushes against the brake release lever (30) which pushes the light brake pad away from the spool chuck (20). As soon as the takeup drum (7) moves counter-clockwise, the relay switch (46), actuated by the switch arm, transfers the 28 volts from the forward solenoid to the relay (76), as explained under "Relay and Relay Control Switch".

To adjust the reversing mechanism of the recorder do so as follows -

1. With reverse solenoid (65) energized, insert a 1/32" gauge between the solenoid plunger and the face of the solenoid, (the solenoid will hum and chatter but do not be alarmed).

2. With the solenoid in this position, the drive wheel (29) should just touch the supply spool (20).

3. If this engagement is too great, bend the end of the motor tilt arm, (78A) down until the condition is corrected.

4. With motor tilt arm (78A) properly adjusted and the gauge removed, the additional movement of the drive wheel (29) toward the chuck should give a quick pickup in rewind.

Emergency Brake -

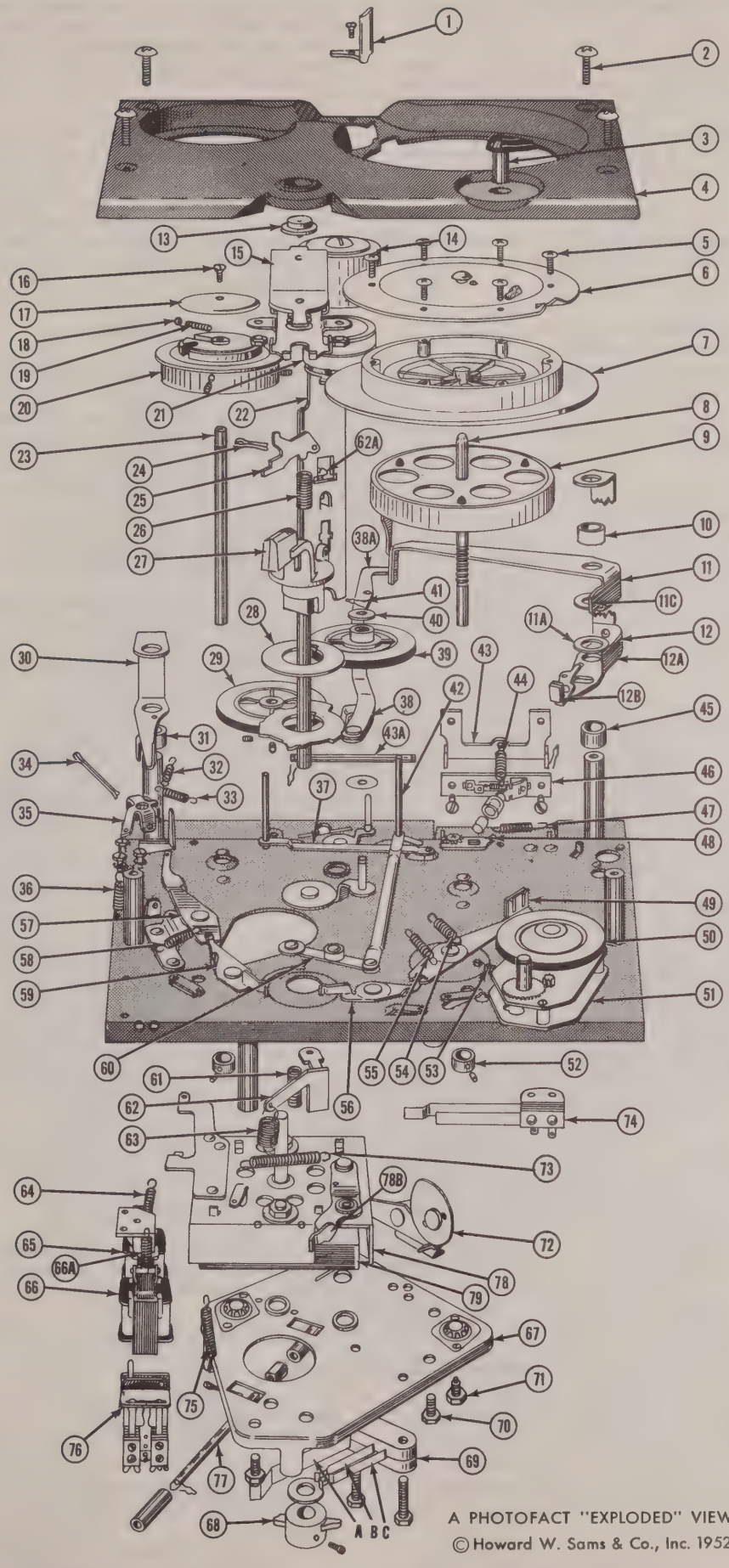
The emergency brake (items 11 and 12), Figure 2 is ready to work at any time during rewind. If during rewind the recording wire becomes loose or is broken, the emergency brake immediately applies a heavy brake to the takeup drum (9) stopping the drum. This prompt action prevents the "flywheel effect" of the takeup drum from spilling or tangling the wire.

When the control (27) is turned to Rewind, the hook end of link (38A) is moved away from the stop arm (11). This allows the stop arm to move against the wire. During Rewind and as long as the wire winds properly, the wire will be tight enough to hold the emergency brake away from the takeup chuck (9). However, if the wire should brake, the stop arm (11) is released by the wire, thereby allowing the emergency brake, to engage the takeup drum (9) immediately stopping the drum, thus preventing the wire from spilling. Tension spring (12A) has a very short but moderately strong pull. However, it is almost completely relaxed when the upright end of the control arm (11) comes to within 1/8" to 1/16" of the hook on the end lever (38A).

If the wire breaks, the pull of the spring is strong enough to snap the control arm (11) back, thus actuating the emergency brake.

Adjust the emergency brake as follows -

With no wire on the recorder and the control lever (27) turned to Rewind, there should be about 1/16" clearance between the brake control arm (11) and the hook on the end of lever (38A), when the brake shoe (12B) barely touches the chuck (9).



A PHOTOFACT "EXPLODED" VIEW

© Howard W. Sams & Co., Inc. 1952

1. Remove spring (47) from the emergency brake (12).

2. If necessary, slightly loosen the set screw holding the brake pad (12B) to give a 1 to 2 pound brake pressure on the takeup drum chuck (9) when fully engaged. The brake pressure should not be so heavy that it breaks wire, yet it should not allow the drum to coast after the emergency brakes engages.

3. If necessary, bend tail (11C) of the control arm so that the brake pad just touches the drum chuck (9) when there is 1/16" to 1/8" clearance between the control arm, (11) and the hook (38A).

4. Attach the tension spring (47). If, after spring (47) is attached to the emergency brake (12), the brake pad engages the drum (9) or does not touch the drum, adjust the spring tension.

(a) Loosen set screw holding the adjusting bracket (48).

(b) Adjust the bracket until the pad (12B) just touches the drum. The pad should be adjusted so the drum can be turned counter-clockwise, by hand, without the brake grabbing. Then increase the spring tension just enough so the brake will grab, unless the control arm (11) is held more than 1/16" to 1/8" away from the hook lever (38).

The Relay and Relay Control Switch -

The relay control switch (46) is a single pole double throw switch. This switch (46) is in constant contact with takeup drum and is actuated by the direction of rotation of the drum.

When the takeup drum is running in a clockwise direction, the control switch connects the (28) volt solenoid control voltage to the Run-Stop solenoid (66). The circuit is completed to ground through the foot switch. As long as the relay is not energized the contacts "3-4" are closed completing the circuit from the RF bias oscillator to the erase and bias coils of the head and contacts "6-7" are open, permitting the 6AR5 to operate in a normal manner. While playing back the recording, the bias circuit is opened by the "Transcribe" switch even though contacts "3-4" remain closed.

When the takeup drum (9) is turning "backward" during rewind, the relay control switch (46) is automatically reversed. The 28 volts are removed from the run stop solenoid (66) and applied to the relay (76). This opens the bias circuit contacts "3-4" to prevent accidental erasure and closes the 6AR5 grid shorting contacts "6-7" to kill the Audio signal.

The relay control switch arm should meet the takeup drum chuck at a right angle or up to 15° toward the recording head. It should never lead the takeup drum or it will rest past its pivot point and not flip back when the drum turns counter-clockwise. The upright form lug which limits the throw of the switch (46) towards the head should be bent so there is about 1/16" movement of the switch after the contacts have "made". There should also be a slight movement in the opposite direction after the contacts "make" with the drum going forward.

The solenoid ground switch (69B and C) is opened mechanically when the main control lever (27) is moved to Rewind. It is then impossible for the solenoids to act. They can operate only when the control lever is in the Run position and the ground switch closed.

It is important that the switch contacts (69B and C) (see Figure 3) "make" before the control lever reaches the first "hump" of the cam, the spot at which it becomes hard to move the lever at the same time they cannot be too close together or arcing will be heard when the lever is moved from Run to Stop. Special care must be used when adjusting the spacing of the contacts of this switch.

TROUBLES

Rewind Starts Too Slowly With Foot Control -

1. The rear section of the motor tilt arm (18A) may be bent too high, thereby causing the drive wheel (29) to be pulled too tightly against the supply spool chuck (20). See "Reverse Position" under "Forward and Reverse Solenoids".

Emergency Brake Fails to Work or Grabs During Normal Rewind -

1. Brake shoe pad may be worn thereby causing the brake to fail in operation.

2. Emergency brake out of adjustment. See "Emergency Brake".

3. Spring (47) may be out of adjustment. See "Emergency Brake".

Wire Does Not Wind on Supply Chuck or Takeup Drum Evenly -

1. Supply chuck shaft (23) or takeup drum shaft (8) out of adjustment. See "Level Wind Adjustment".

2. Check recording head and slide to see if it moves freely.

(a) Dirt may have accumulated on the head slide (22) or the lubricant may have hardened. Clean the slide with carbon tetrachloride and lubricate with light grease to insure smooth operation.

(b) The head slide (22) may be bent, causing it to stick. Repair or Replace.

Wire Winds Loosely -

1. Check the "Light Brake" on both drums. If they are not adjusted properly the wire will wind loose and uneven.

(a) See Paragraph on "The Brakes" under Adjustments.

Mechanism Will Not Reverse When Foot Control is Used -

1. Motor tilt arm (78A) incorrectly adjusted thereby preventing proper engagement of the drive wheel (29) and supply chuck (20).

(a) See "Reverse Position" under "Forward and Reverse Solenoids".

Erases During Reverse -

Relay control switch (46) incorrectly positioned, thereby preventing the switch from being reversed when the takeup drum reverses.

(a) See "Relay and Relay Control Switch".

Recorder Will Not Turn On -

1. Check for burned out fuse.
2. Loose A. C. plug connection.
3. Automatic stop control arms loose.

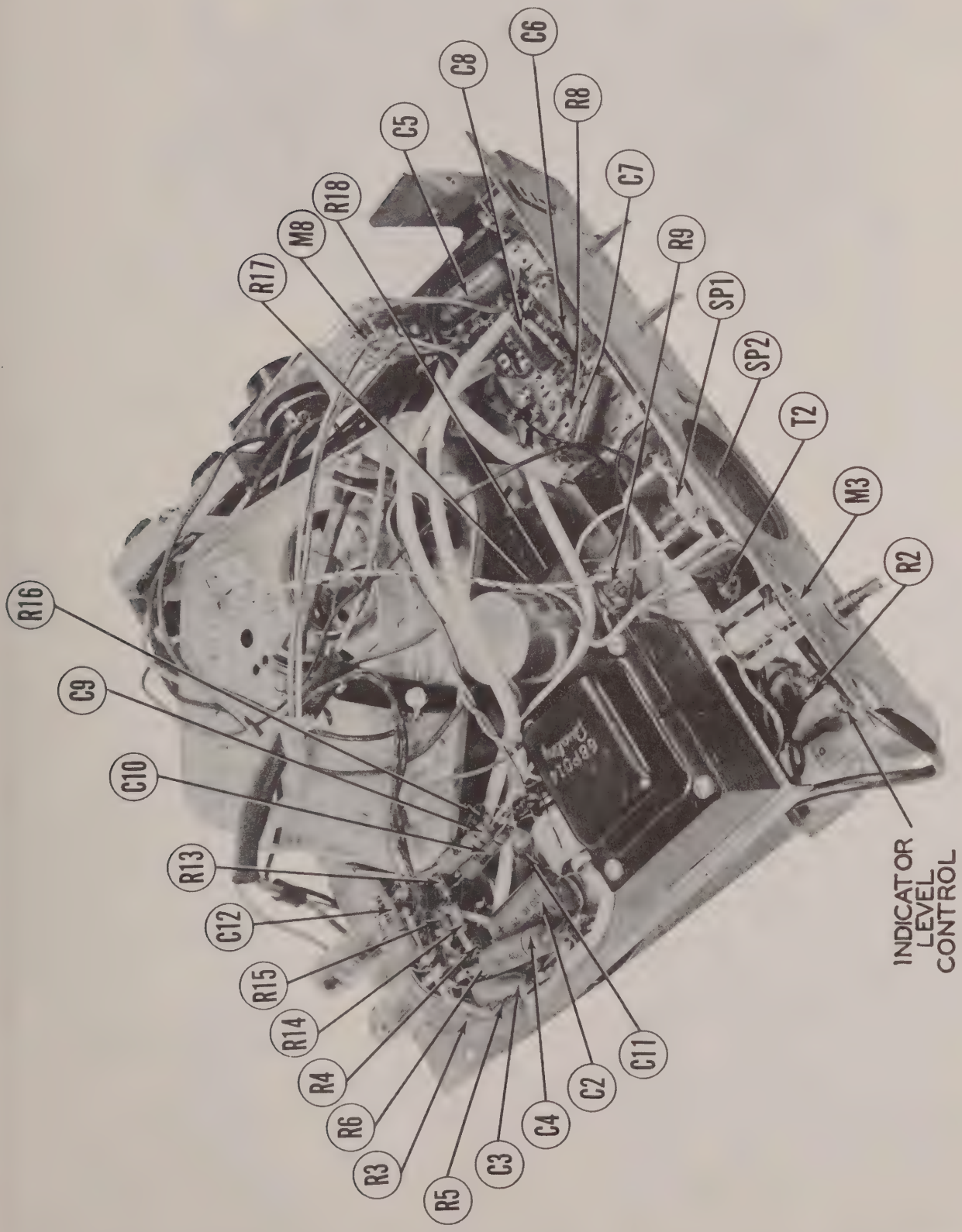
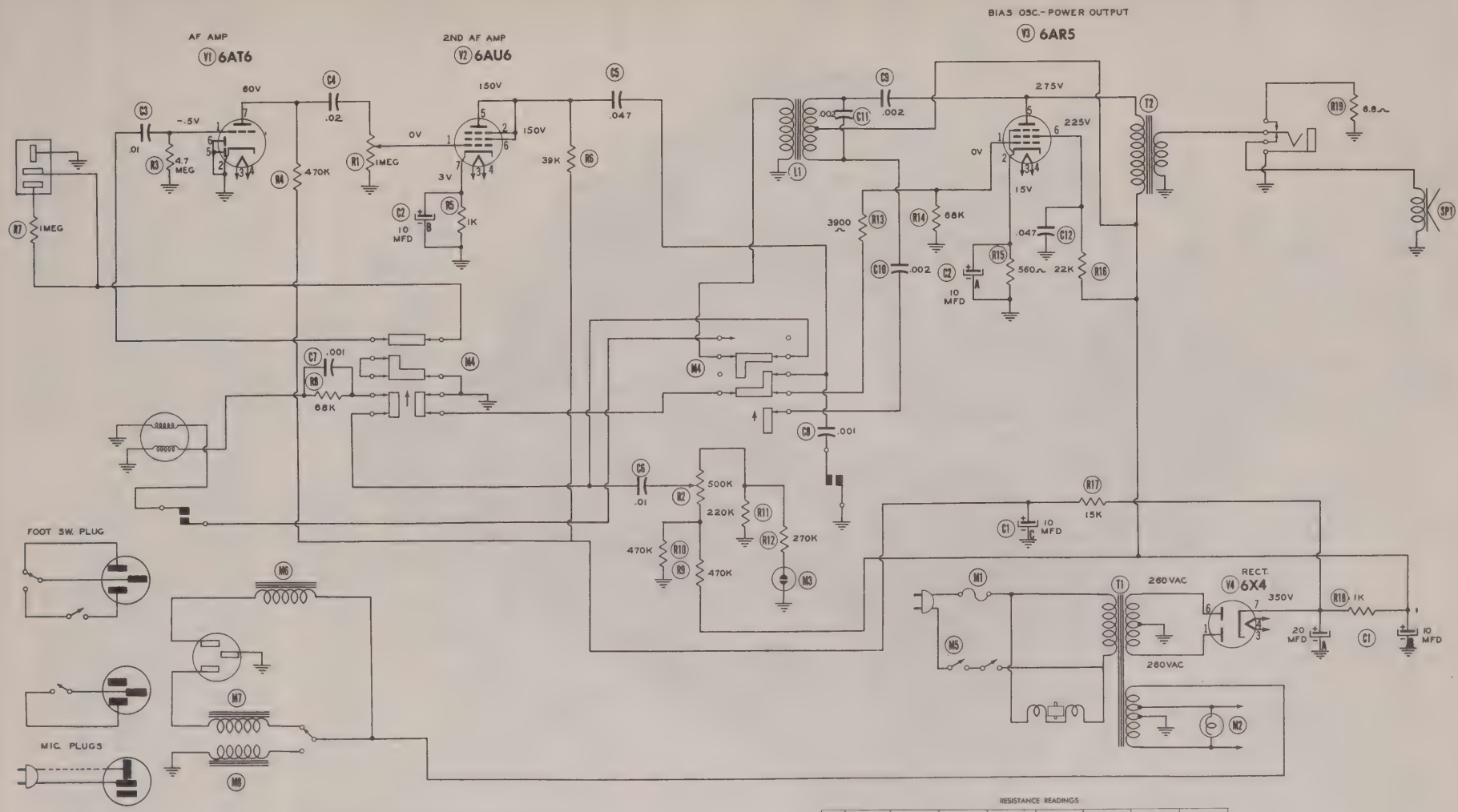


Figure 6



A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1952

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6AT6	4.7Meg	0Ω	.1Ω	.1Ω	0Ω	0Ω	†470KΩ
V 2	6AU6	1Meg	†50KΩ	.1Ω	.1Ω	†50KΩ	†50KΩ	[illegible]
V 3	6AR5	39KΩ	560Ω	.1Ω	.1Ω	†1.3KΩ	†22KΩ	[illegible]
V 4	6X4	190Ω	150KΩ	.1Ω	.1Ω	Inf.	200Ω	150KΩ

ALL MEASUREMENTS TAKEN WITH PUSHBUTTONS IN "OUT" POSTION
† MEASURED FROM PIN 7 OF V4

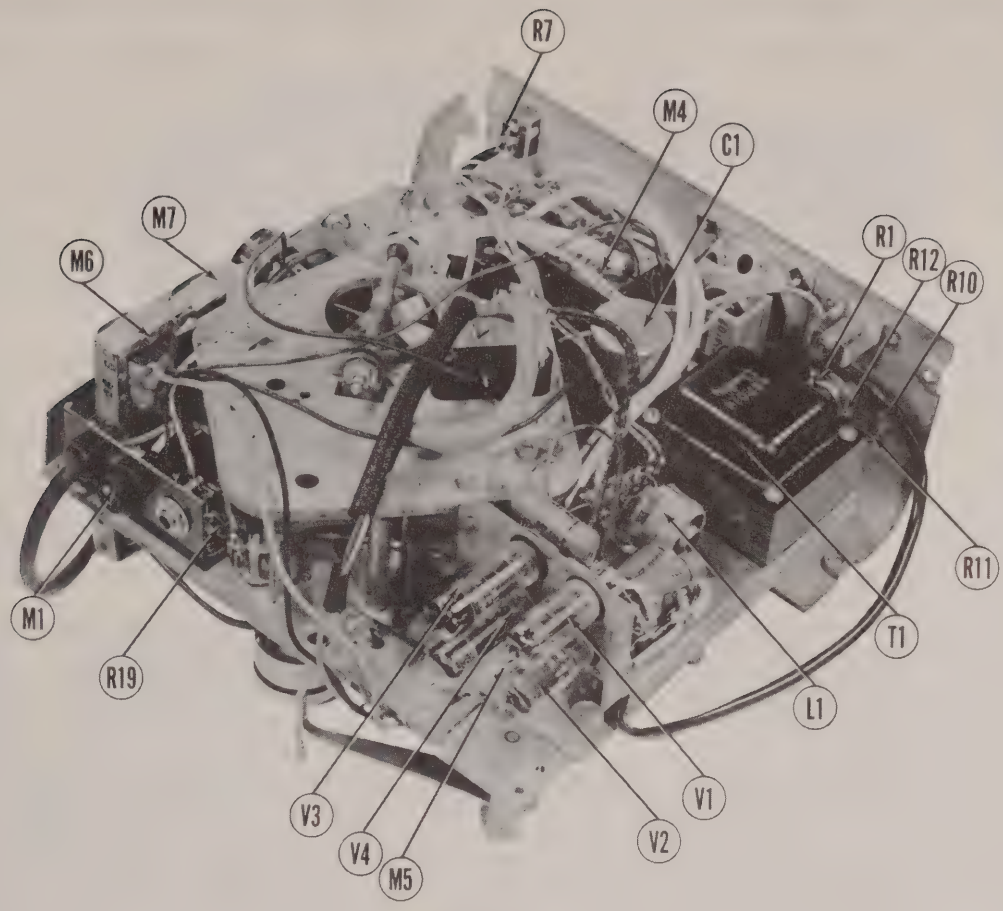


Figure 7

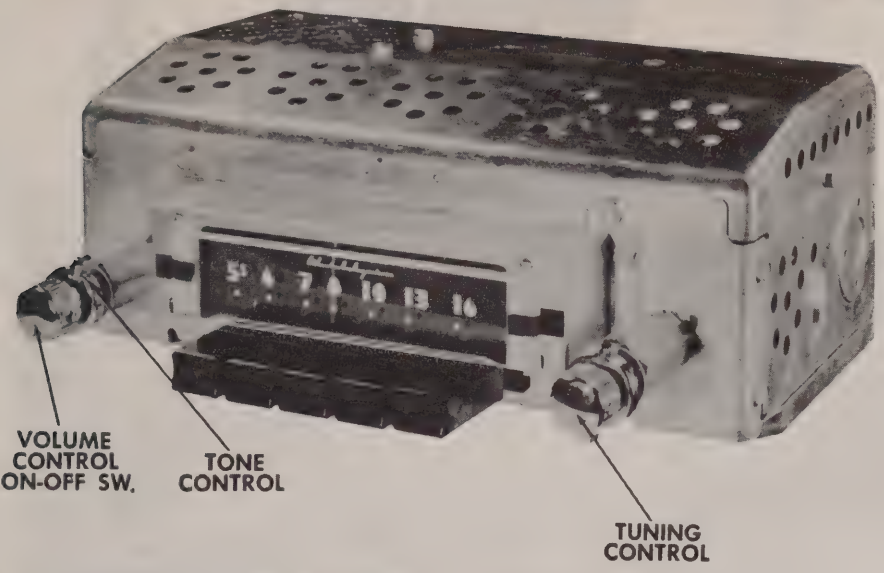
MECHANICAL PARTS LIST

Ref. No.	Part. No.	Description	Ref. No.	Part No.	Description
1	42P224	Wire Guide			includes items 16, 17, 18, 19, 20
2	26P826	Mounting Screw-Top Plate			and 23.
3	49X106	Pointer-Elapsed Time		26P633	Set Screw-Supply Spool
4	11x637	Top Plate	21	2904	Recording Head
5	26P804	Drum Cover Mounting Screw		26P1024	Head Retaining Screw
6	11X181W	Takeup Drum Cover	22	11X741	Slide and Socket Assembly
	26P305	Leader Clip Tension Spring		38P021	Head Socket
	46P137	Leader Clip Tension Spring		50P205	Socket Retainer
7	TD-422	Takeup Drum-includes items	23	41P618	Supply Chuck Shaft
		5 and 6	24	27P231	Cotter Pin for item 25
8	47P030	Takeup Drum Shaft	25	45P946	Stop for Control Lever item 27
9	11X344	Drum and Shaft Assembly	26	46P230	Spring for item 25
10	41P771	Spacer-Upper for item 11	27	42X195W	Control Lever
11	11X641	Emergency Stop Arm	28	45P992	Control Lever Spacer
11A	25P458	Washer	29	11X195	Drive Wheel
12	11X642	Safety Lever and Brake Assembly	30	45P1171	Brake Release Lever
	45P1167	Brake Shoe	31	41P771	Spacer for item 30
	28P008	Brake Pad	32	46P130	Tension Spring-Left Brake Arm
13	49P139	Safety Button	33	46P256	Tension Spring for item 30
14	45P987	Recording Head Cover			
	26P1023	Head Cover Screw	34	27P207	Cotter Pin for item 35
15		Mounting Bracket for Safety	35	45P965	Brake Lever
		Button		45P856	Bracket for item 35
	46P228	Compression Spring for Safety	36	46P165	Tension Spring for item 35
		Button	37	11X343	Shut-Off Link and Coupling
16	26P827	Chuck Cap Mounting Screw	38	11X636	Cam and Link Assembly
17	45P492-W	Chuck Cap	39	11X522	Idler Wheel
18	48P014	Steel Ball	40	25P030	Felt Washer for item 39
19	48P142	Compression Spring-Steel Ball	41	50P125	Retaining Clip for item 39
20	11X347	Supply Chuck and Shaft Assembly	42	41P623	Motor Shut-Off Crank

Ref. No.	Part No.	Description
43	45P967	Bracket for item 46
43A	41P763	Pivot Pin for item 46
44	46P165	Tension Spring-Toggle Switch
45	41P770	Spacer-Lower for item 11
46	11X742	Switch, Bracket and Brake Assembly Complete-includes items 43, 43A, 44 and the following parts -
	32P064	A. C. Switch
	49P140	Brake Post
	32P012	Brake Pad
47	46P265	Tension Spring for Safety Brake
48	45P1177	Adjusting Bracket for Tension Spring item 47
49	45P611	Right Brake Arm
	28P008	Brake Pad
50	11X359	Wheel and Pinion
51	11X743	Clock Mechanism and Wheel
52	41P557	Play Adjusting Collar
	26P633	Set Screw
53	46P205	Tension Spring-Clock Mechanism
54	46P257	Tension Spring Right Brake Arm
55	46P131	Tension Spring-Cam Follower
56	45P521	Right Cam Follower
57	45P966	Left Brake Arm
	28P008	Brake Pad
58	46P131	Tension Spring-Cam Follower
59	45P719	Left Cam Follower
60	11X342	Shut-Off Link
61	46P135	Head Stroke Adjusting Spring
62	45P544	Head Stroke Adjusting Bracket
62A	26P284	Head Stroke Adjusting Screw
63	46P132	Head Slide Tension Spring
64	46P272	Tension Spring for item 65
65	65P035	Rewind Solenoid (Rear)
	41P918	Pivot Pin for item 65
66	65P034	Stop and Run Solenoid (Front)
	41P762	Pivot Pin for item 66
66A	46P254	Tension Spring for item 66
67	11X740	Sub Base Assembly
68	49P105	Switch Cam
69	49P060	Switch Black
A	45P728	Switch Leaf
B	11X800	Switch Leaf
C	11X339	Switch Leaf
70	26P747	Screw and Lock Washer
71	11X277	Spool Weight Adjusting Screw Assembly
72	11X345	Cam, Gear and Rocker Assembly
73	46P182	Tension Spring-Motor Cam Follower
74		Leaf Switch for Automatic Shut Off
75	46P281	Motor Tension Spring
76	65P038	Relay
77	41P753	Motor Pivot Pin
	50P125	Retainer
	27P124	Cotter Pin
	41P839	Spacer
	51P047	Motor Shaft Bearing
78	17X507	Bearing and Cover Assembly
79	15X118	Motor and Cover Assembly
80	41P775	Pivot Shaft
81	41P774	Adjusting Screw for Foot Tension
82	45P999	"Forward" Foot Pedal
83	46P247	Tension Spring
84	49P142	Ratchet
	41P773	Shaft for Ratchet
85	32P066	Switch-Forward
86		Foot Switch Base
87	32P067	Switch-Reverse
88	45P998	"Reverse" Foot Pedal
	46P243	Compression Spring
	24P053	Rubber Cover

ELECTRICAL PARTS LIST

Item No	Use and Description
V1	1st. AF Amplifier, 6AT6
V2	2nd. AF Amplifier, 6AU6
V3	Bias Oscillator-Power Output, 6AR5
V4	Rectifier, 6 X 4
C1A	Filter (Electrolytic) 20 MFD. @ 450V.
C1B	Filter (Electrolytic) 10 MFD. @ 450V.
C1C	Filter (Electrolytic) 10 MFD. @ 350V.
C2A	Output Cathode Bypass (Electrolytic) 10 MFD. @ 25V.
C2B	2nd. AF Amp Cathode Bypass (Electrolytic) 10 MFD. @ 25V.
C3	Audio Coupling, .01 MFD. @ 100V.
C4	Audio Coupling, .02 MFD. @ 400V.
C5	Audio Coupling, .047MFD. @ 400V.
C6	Tuning Indicator Coupling, .01 MFD. @ 400V.
C7	Tone Compensation, .001 MFD. @ 600V.
C8	Tone Compensation, .001MFD. @ 600V.
C9	Oscillator Feedback, .002 MFD. @ 600V.
C10	Oscillator Grid Cap., .002 MFD. @ 600V.
C11	Fixed Trimmer, .002 MFD. @ 600V.
C12	Output Screen, .047 MFD. @ 400V.
R1	Volume Control, 1 MEG., 1/2 Watt SPST Switch
R2	Indicator level Control, 500K Ohm, 1/2 Watt
R3	1st. AF Amp. Grid, 4.7 MEG., 1/2 Watt
R4	1st. AF Amp. Plate, 470K Ohm.
R5	2nd. AF Amp. Cathode, 1000 Ohm.
R6	2nd. AF Amp. Plate, 39K Ohm.
R7	Mike Input Shunt, 1 MEG.
R8	Tone Compensation, 68K Ohm.
R9	Indicator Network, 470K Ohm.
R10	Indicator Network, 470K Ohm.
R11	Indicator Network, 220K Ohm.
R12	Indicator Network, 270K Ohm.
R13	Bias Oscillator Grid, 3900 Ohm
R14	Output Grid, 68K Ohm.
R15	Output Cathode, 560 Ohm, 1/2 Watt-See Note
R16	Output Screen, 22K Ohm, 1 Watt
R17	Filter, 15K Ohm, 1/2 Watt
R18	Filter, 1000 Ohm, 2 Watt
R19	Output Transformer Shunt-Wire Wound 6.8 Ohm.
*	Note- Some Models Use 470 Ohm Resistor In This Application
T1	Power Transformer
T2	Output Transformer
L1	Erase Oscillator Coil
SP1	Speaker 2 - 1/2 P.M.
SP2	Cone, (3.2 Ohm Voice Coil)
M1	Fuse (1 Amp.)
M2	Pilot Light (Type # 51)
M3	Neon Light (Type N E 51)
M4	Record - Playback Switch
M5	Shut - Off Switch
M6	Rewind Solenoid
M7	Stop - Run Solenoid
M8	Relay



WILLYS
MODEL 677012

WILLYS
MODEL 677012

TRADE NAME	Willys Model 677012 (Factory Model WS1C)
MANUFACTURER	Willys-Overland Motors., Toledo Ohio
TYPE SET	Battery Operated Custom Built Automotive Superheterodyne Receiver
TUBES (SIX)	Types 6BA6 RF Amp., 6BE6 Conv., 6BA6 IF Amp., 6AT6 Det.-AVC-AF Amp., 6AQ5 Power Output 6X4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 6.8 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6, (V2) Low side to chassis	455KC (400∿mod.	Tuning cores fully out (high freq. end)	Across voice coil.	A1, A2, A3, A4.	Adjust for maximum output.
	The following core alignment should not be performed unless a coil or core has been replaced or tampered with. If core alignment is not to be performed, continue with step 6.						
2.	Fig.1	High side thru dummy to antenna recepticle. Low side to chassis.	1605KC	Tuning cores fully out. (High freq. end)	Across voice coil.	A5, A6 A7	Adjust for maximum output.
3.	"	"	1300KC	Turn Tuning control until core carriage moves inward 5/16in. from fully out.	"	A8, A9	"
4.	"	"	1605KC	Turn tuning knob for max. output.	"	A5, A6 A7	"
5.	"	"	1300KC	Tune for max. output.	"	A8, A9, A10	" Repeat step 4.
	If core alignment has been performed, do not perform step 6.						
6.	Fig.1.	High side thru dummy to ant. receptacle. Low side to chassis.	1605KC	Tuning cores fully out.	Across voice coil.	A5	Adjust for maximum output.
7.	"	"	1300KC	Tune for max. output.	"	A6, A7	"

After set is installed, fully extend antenna and tune in a weak station near 1400KC. Retouch A7 for maximum output.

PUSHBUTTON ADJUSTMENTS

Since the pushbuttons are mechanical, any button may be adjusted to any station within the receiver's tuning range.

Pull button out and carefully tune in the desired station. Depress the button all the way in. Repeat this procedure for each button.

FIG. 1

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."

"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1952 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

WILLYS
MODEL 677012

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: WILLYS PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amplifier	6BA6	6BA6	7BK	
V4	Detector-AVC-AF Amplifier	6AT6	6AT6	7BT	
V5	Power Output	6AQ5	6AQ5	7BZ	
V6	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: WILLYS PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	15	350	23A485677	AFH3-104		UP15S135C		TVL-3630	■ Filter
B	10	350							▲ Filter
C	20	25							Power Output Cathode
C2	90		21A591682						Fixed Trimmer
C3	.006	100	8A4529	P488-006		PTE6D6	GP2-333-602	6TM-D6	RF Coupling
C4	.05	100	8R13514	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C5	.1	400	8R13166	P488-1	DF-104	PTE4P1		4TM-P1	Decoupling
C6	5		21K70720	SI5NP0	TCZ-4.7	5R5V5	NP0K-050		RF Coupling
C7	50	500	21R6513	1469-00005		5R5Q5		MS-45	Osc. Grid. Cap.
C8	220						N220K-221		Fixed Trimmer
C9	5		21K70720	SI5NP0	TCZ-4.7	5R5V5	NP0K-050		IF Coupling
C10	.01	100	8R472754	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C11	.006	400	8K71910	P488-006		PTE6D6	GP2-333-602	6TM-D6	Tone Comp.
C12	.02	100	8R51209	P488-02	D6-203	PTE4S2		2TM-S2	Tone Comp.
C13	.01	600	8R23690	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C14	500	500	21R6590	1468-0005	D6-501	5W5T5	GP2K-501	1FM-35	Power Output Grid
C15	.004	400	8K71909	P688-004	D6-402	PTE6D4	GP2-333-402	6TM-D4	Power Output Plate
C16	.02	1000	8K114137	P1088-02		PTE16S2		MB-S2	Buffer Cap.
C17	.5	100	8K17028	P185-5		GT2P5		68P20	Hash Filter
C18	.5	100	8K17028	P185-5		GT2P5		68P20	Hash Filter

CONTROLS

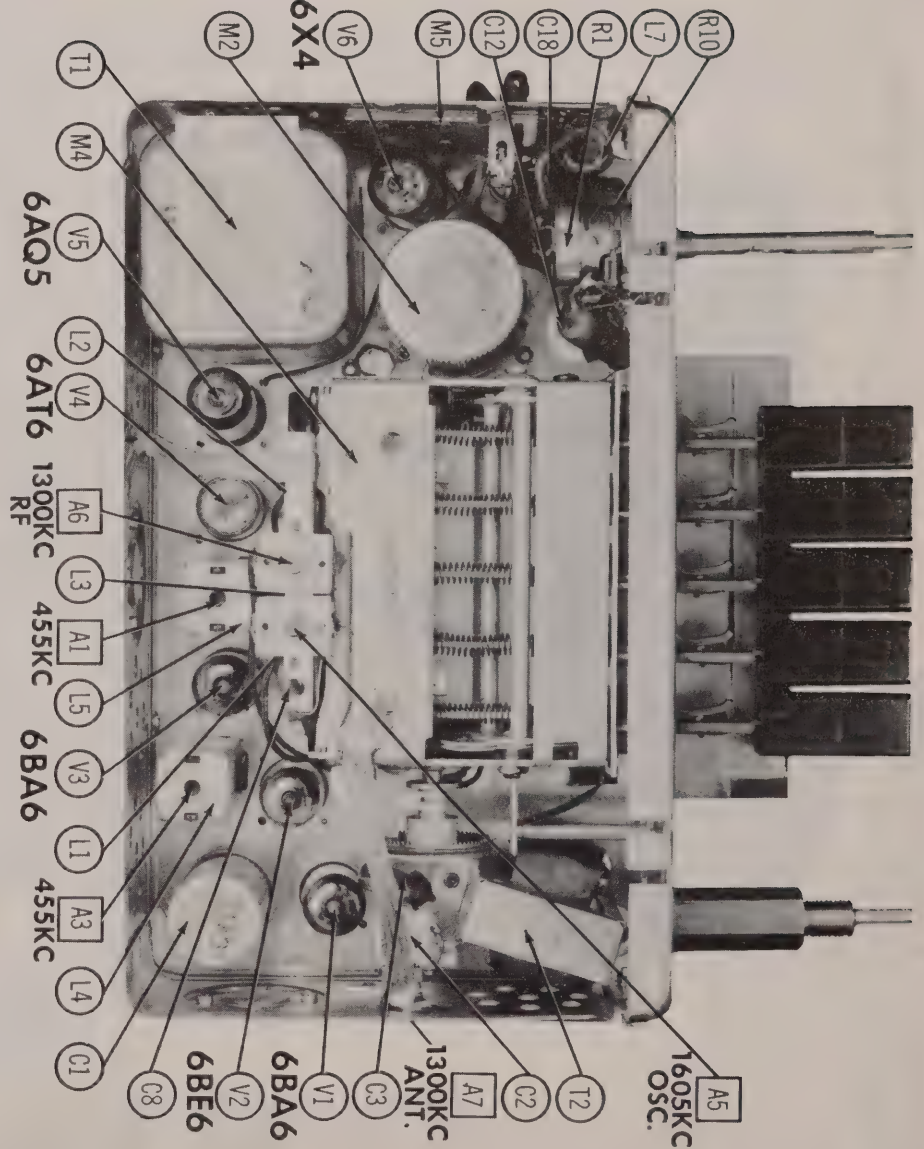
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WILLYS PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	½	18K502898	Concentrikit PB11-137*			Tone Control Panel
B	250KΩ	½		RB18-130X*			Volume Control-Rear Tapped ⓐ 60KΩ
C	Shaft end			E-187 *			Attach per instructions in "Concentrikit".
D	Switch			76-1 *			Attach per instructions in "Concentrikit".

NOTE: Additional parts to be used with Concentrikit.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WILLYS PART No.	IRC PART No.	IDENTIFICATION CODES
R2	470KΩ	½	6R6032	BTS-470K	RF Amplifier Grid
R3	150Ω	½	6R3992	BTS-150	RF Amplifier Cathode
R4	22KΩ	½	6R6028	BTS-22K	Converter Grid
R5	33KΩ	½	6R6012	BTS-33K	Oscillator Grid
R6	3900Ω	2	6R476012	BTB-3900	Voltage Dropping
R7	330Ω	½	6R6010	BTS-330	IF Amplifier Cathode
R8	1Meg	½	6R6004	BTS-1Meg	AVC Network
R9	1Meg	½	6R6004	BTS-1 Meg	AVC Network
R10	12KΩ	½	6R6394	BTS-12K	Tone Compensation
R11	47KΩ	½	6R6056	BTS-47K	Diode RF Filter
R12	2700Ω	½	6R5577	BTS-2700	AF Amplifier Cathode
R13	4.7Meg	½	6R2122	BTS-4.7Meg	AF Amplifier Grid
R14	470KΩ	½	6R6032	BTS-470K	AF Amplifier Plate Load
R15	220KΩ	½	6R6014	BTS-220K	Output Grid
R16	270Ω	1	6R6336	BTA-270	Output Cathode
R17	2200Ω	2	6R476130	BTB-2200	Filter
R18	56Ω	½	6R5614	BW-½-56	Hash Filter
R19	56Ω	½	6R5614	BW-½-56	Hash Filter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	WILLYS PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6.3VDC ② 4.0A	520VCT ② .055A			25B472533	P-4062 ①	P-2972 ①	VT-3 ①

① Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		WILLYS PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	5.6KΩ	3.5 Ω	500Ω	.7Ω	25B500727	A-3877	A-2930	RO-8	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	WILLYS PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	P.M.	3.5Ω	50B500707	ST-108 Mod. P6-X	6A1	② Alternate Speaker
B			50B592352 ②			
	CONE DIA.	V. C. DIA.				
SP2	6 in.	9/16"				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	WILLYS PART No.	MERIT PART No.	IRC PART No.	
L1	Ant. Coil	11.2Ω					
L2	RF Coil	11.2Ω					
L3	Osc. Coil	4.4Ω					
L4	Input IF	18Ω	18Ω	24C485553	BC-352		
L5	Output IF	18Ω	18Ω	24K485555	BC-353		
L6	Fil. Choke	0Ω		24K592269			
L7	Hash Choke	0Ω		24A472535			

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			WILLYS PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	SFE	9A.	65K16248	9K510182 (with fuse)	307009	155009	

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				WILLYS PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M2	Interrupter	6.3	115v	48B3333	5342	5342	

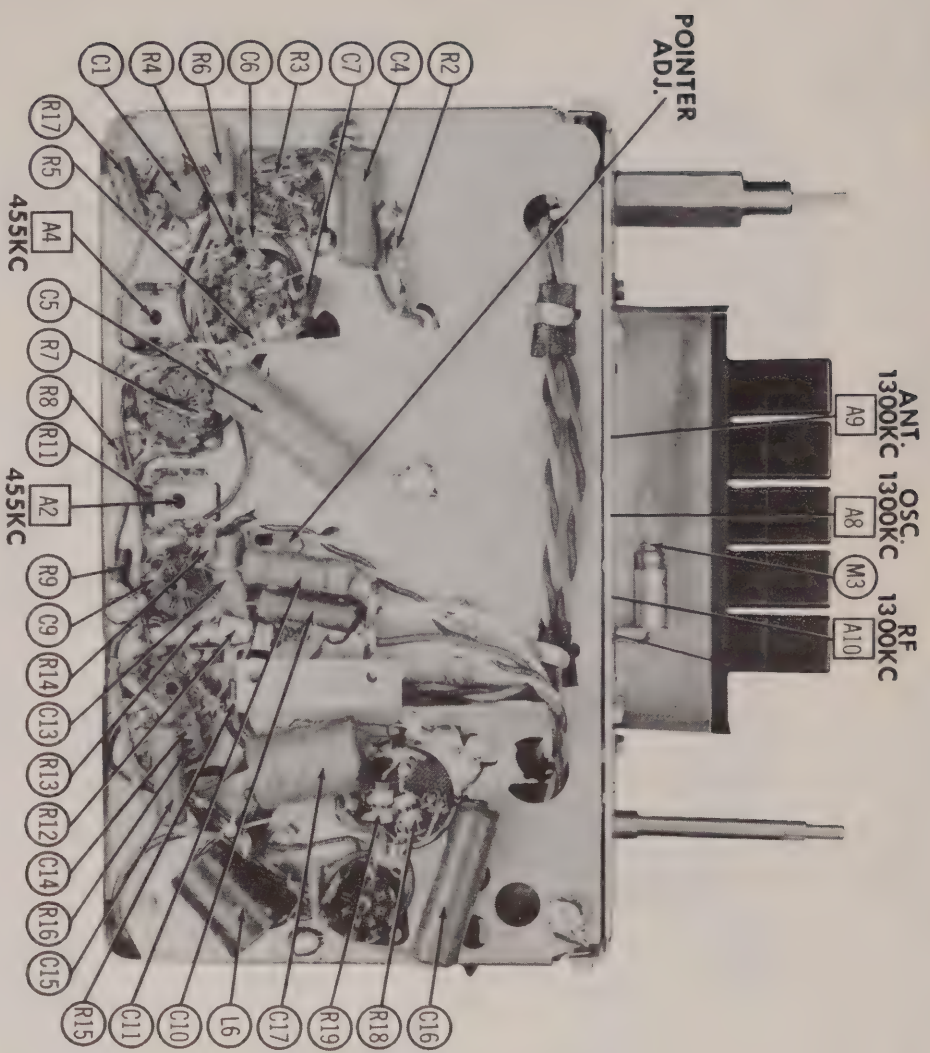
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					WILLYS PART No.		
M3	Bayonet	6-8	.25	Blue	65X10867		Type number 44.

MISCELLANEOUS

ITEM No.	PART NAME	WILLYS PART No.	NOTES
M4	Tuner Unit	51D502000	
M5	Spark Plate	1A501207	
	Pointer	1X510728	
	Dial Scale	34B502890	
	Knob	1X473155	Tuning, Volume
	Knob	37K472939	Tone
	Knob	36K502896	Dummy (Behind Tuning)

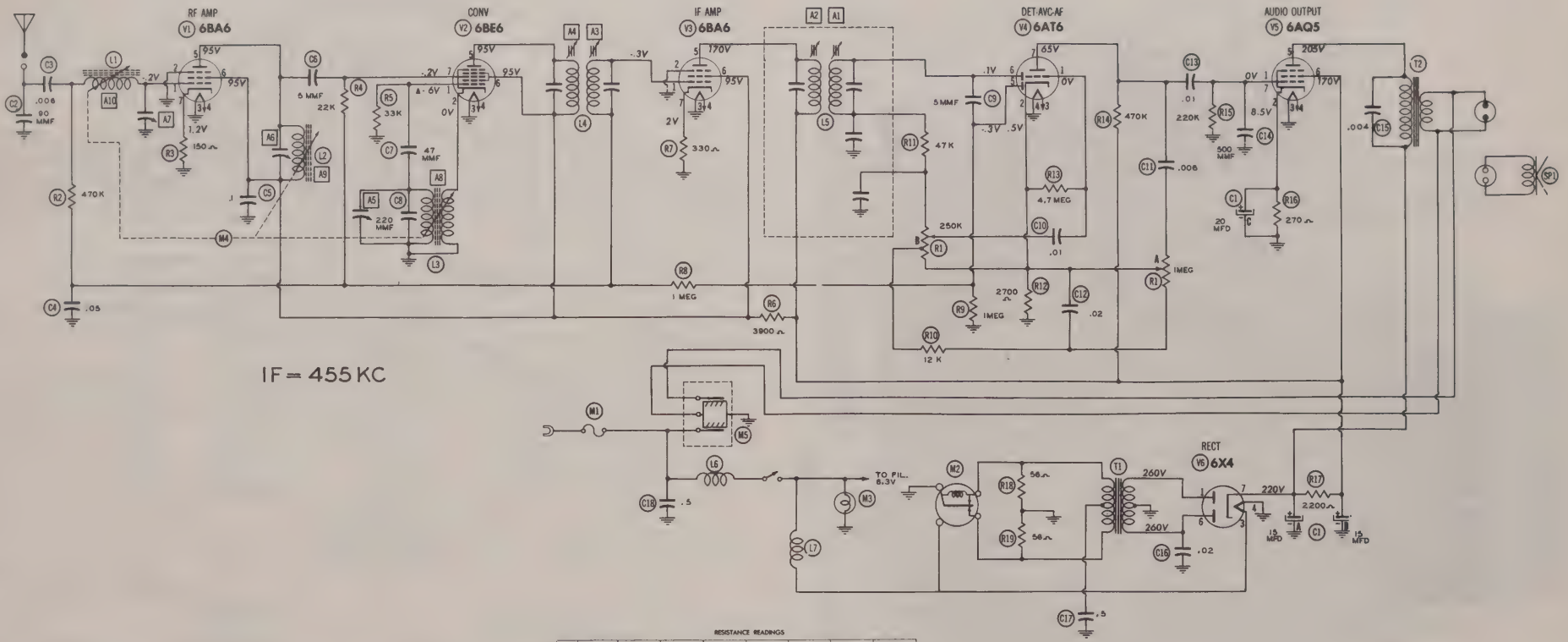
CHASSIS—BOTTOM VIEW



SET 156 FOLDER 14

WILLYS MODEL 677012

WILLYS MODEL 677012



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BA6	2.4Meg	0Ω	0Ω	.4Ω	†6.1KΩ	†6.1KΩ	150Ω
V 2	6BE6	33KΩ	.5Ω	0Ω	.4Ω	†6.1KΩ	†6.1KΩ	2Meg
V 3	6BA6	2Meg	0Ω	0Ω	.4Ω	†2.2KΩ	†6.1KΩ	330Ω
V 4	6AT6	4.7Meg	2.7KΩ	.4Ω	0Ω	1Meg	180KΩ	†470KΩ
V 5	6AQ5	220KΩ	270Ω	0Ω	.4Ω	†500Ω	†2.2KΩ	220KΩ
V 6	6X4	350Ω	INF	.4Ω	0Ω	INF	350Ω	500KΩ

▲ - TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 7 OF V6

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1952

156-14

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

ZENITH
MODEL H-401, G (Ch. 4H40)

ZENITH
MODEL H-401, G (Ch. 4H40)

ZENITH
MODEL H-401, G (Ch. 4H40)

ZENITH MODEL H401

TRADE NAME	Zenith H401, G(Ch.4H40)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.
TYPE SET	Three Power Operated Portable Superheterodyne with Loop Antenna
TUBES (FOUR)	Types 1R5 Converter, 1U4 IF Amp., 1S5 or 1U5 Det.-AVC-AF, 3V4 Power Output
POWER SUPPLY	110-120 Volts AC-DC or 9 Volts "A" Supply & 90 Volts "B" Supply in Pack Form
RATINGS	.12 Amp. @ 117 Volts AC or 53 MA @ 9 Volts & 10MA @ 90 Volts
TUNING RANGE—BROADCAST	535-1620 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.
Use battery power, if available, If AC power is used, use isolation transformer when available. If not, connect a .1 Mfd capacitor in series with the low side of the signal generator and B-.
Loop should be maintained in the same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD.	High side to stator on rear section of tuning gang. Low side to chassis.	455KC (400%Mod.)	Tuning gang fully closed	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.		Loop	1620KC	Tuning gang fully open.	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune for max. output.	"	A6	"

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1951 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

ZENITH MODEL H401

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Converter	1R5	1R5	9AT	
V2	IF Amplifier	1U4	1U4	6AR	
V3A	Det.-AVC-AF Amp.	1S5	1S5	6AU	
B	Det.-AVC-AF Amp.	1U5	1U5	6BW	
V4	Power Output	3V4	3V4	6RX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	60	150	22-1741	AFH4-23		UP64215X 20	R1079	R1079	▪ Filter
B	20	150							■ Filter
C	40	150							▲ Decoupling
D	200	10							Fil. Filter
C2	10000		22-3	BPD-01	DD-103	1D3S1	821-01	5HK-S1	AVC Filter
C3	220	500	22-182	1469-00025		5R5T25			Osc. Grid Cap.
C4	10000		22-3	BPD-01	DD-103	1D3S1	821-01	5HK-S1	AVC Filter
C5	.1	200	22-827	P288-1	DF-104	PTE4P1		2TM-P1	Fil. Bypass
C6	4000		22-4	BPD-004	D6-402	1D5D4	GP2-333-402	1FM-24	Audio Coupling
C7	100		22-5	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	AF Amp. Plate
C8	10000		22-3	BPD-01	DD-103	1D3S1	821-01	5HK-S1	Audio Coupling †
C9	.02	200	22-1382	P488-02	DF-203	PTE4S2		2TM-S2	AF Amp. Screen
C10	.003	400	22-326	P688-003	D6-302	PTE6D3	GP2-333-302	6TM-D3	Output Plate ¶
C11	10000		22-3	BPD-01	DD-103	1D3S1	821-01	5HK-S1	Line Filter
C12	.05	200	22-829	P288-05	DF-503	PTE4S5		2TM-S5	Line Isolation

† Late Models use 110MMF in this application
¶ Late Models use 10000MMF in this application

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	½	63-2328	Q13-137	AG-63-Z	BSK-70-S	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-2	SWB-2	Not Req.	Attach to R1A per instructions

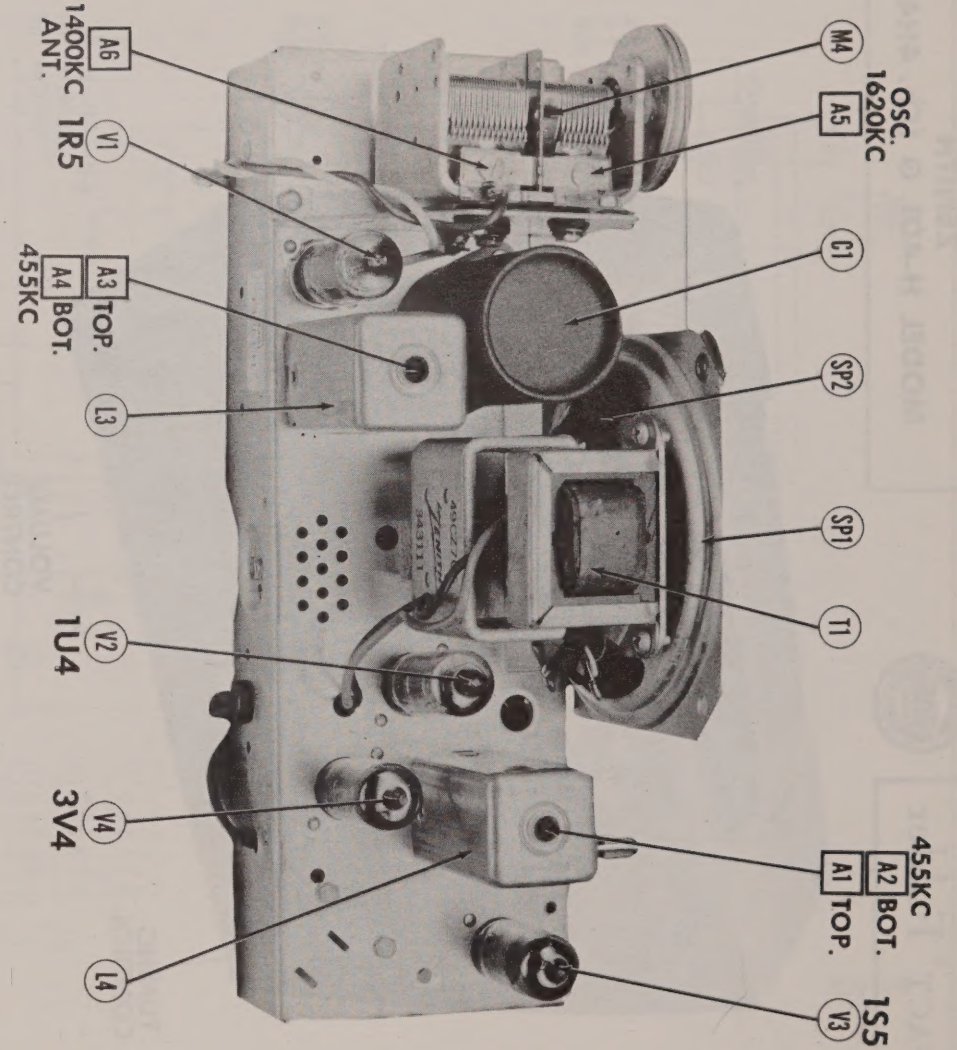
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	IDENTIFICATION CODES
R2	100KΩ	½	63-1870	BTS-100K	Osc. Grid
R3	10Meg	½	63-1954	BTS-10Meg	IF Amp. Grid
R4	10Meg	½	63-1954	BTS-10Meg	AVC Network
R5	10Meg	½	63-1954	BTS-10Meg	Filament String
R6	270Ω	½	63-1761	BTS-270	Filament String
R7	15Meg	½	63-1961	BTS-15Meg	AF Amp. Grid
R8	4.7Meg	½	63-1940	BTS-4.7Meg	AF Amp. Screen
R9	1Meg	½	63-1912	BTS-1Meg	AF Amp. Place
R10	3.3Meg	½	63-1933	BTS-3.3Meg	Output Grid
R11	22KΩ	½	63-1841	BTS-22K	Voltage Divider
R12	10Meg	½	63-1954	BTS-10Meg	Filament String
R13	680Ω	½	63-1778	BTS-680	Voltage Divider
R14A	720Ω	5	63-2010		Filter
B	1350Ω	5			Filament Dropping
R15	140Ω	3	63-1999		Surge Limiter
R16	27Ω	½	63-1719		Filament String
R17	470Ω	½	63-1771	BTS-470	Filament String

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	9.5KΩ	3.3Ω	730Ω	.5Ω	206CZ706	A-3879	A-2932	RO-16	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	ZENITH PART No.	JENSEN PART No.	QUAM PART No.	
SP1	P.M.	3.3Ω	49-706 or 49-710	ST-113 Mod. P-4X	4A1	
	CONE DIA.	V. C. DIA.				
SP2	4"	9/16"				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	ZENITH PART No.	MERIT PART No.	
L1	Loop Ant.	.8Ω		S-17843		
L2	Osc. Coil	1.6Ω	6.3Ω	S-17933	BC-381	
L3	Input IF	24Ω	24Ω	95-1132	BC-368	
L4	Output IF	24Ω	24Ω	95-1133	BC-371	

SELENIUM RECTIFIER

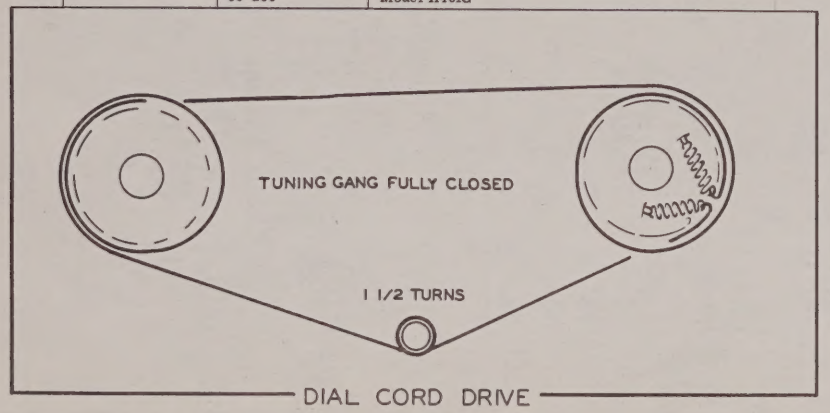
ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	ZENITH PART No.	SYLVANIA PART No.	SELETRON PART No.	
M1	.06A.	212-10	NB-5	5M4	

BATTERIES

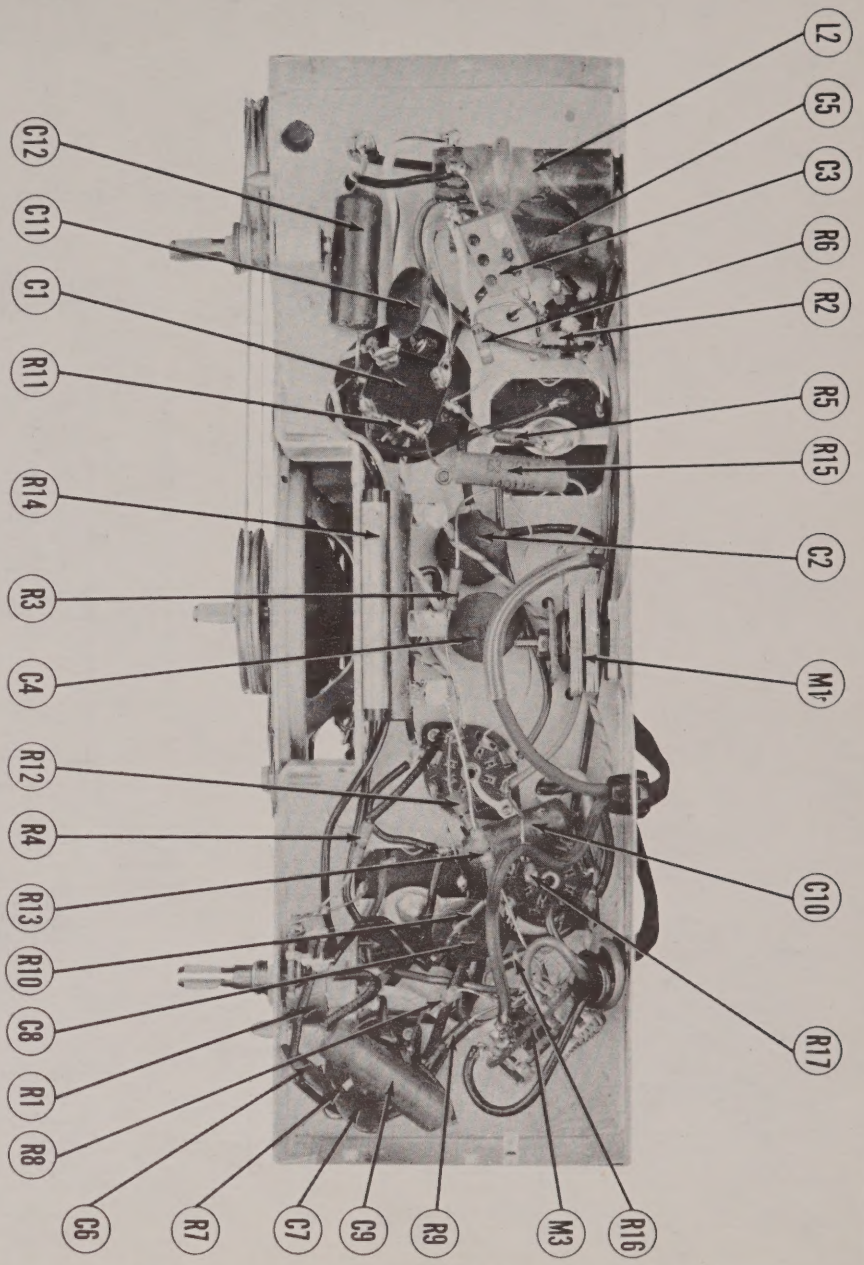
ITEM No.	VOLTAGE	ZENITH PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	9Volt "A" 90Volt "B"				757			F6A60P	

MISCELLANEOUS

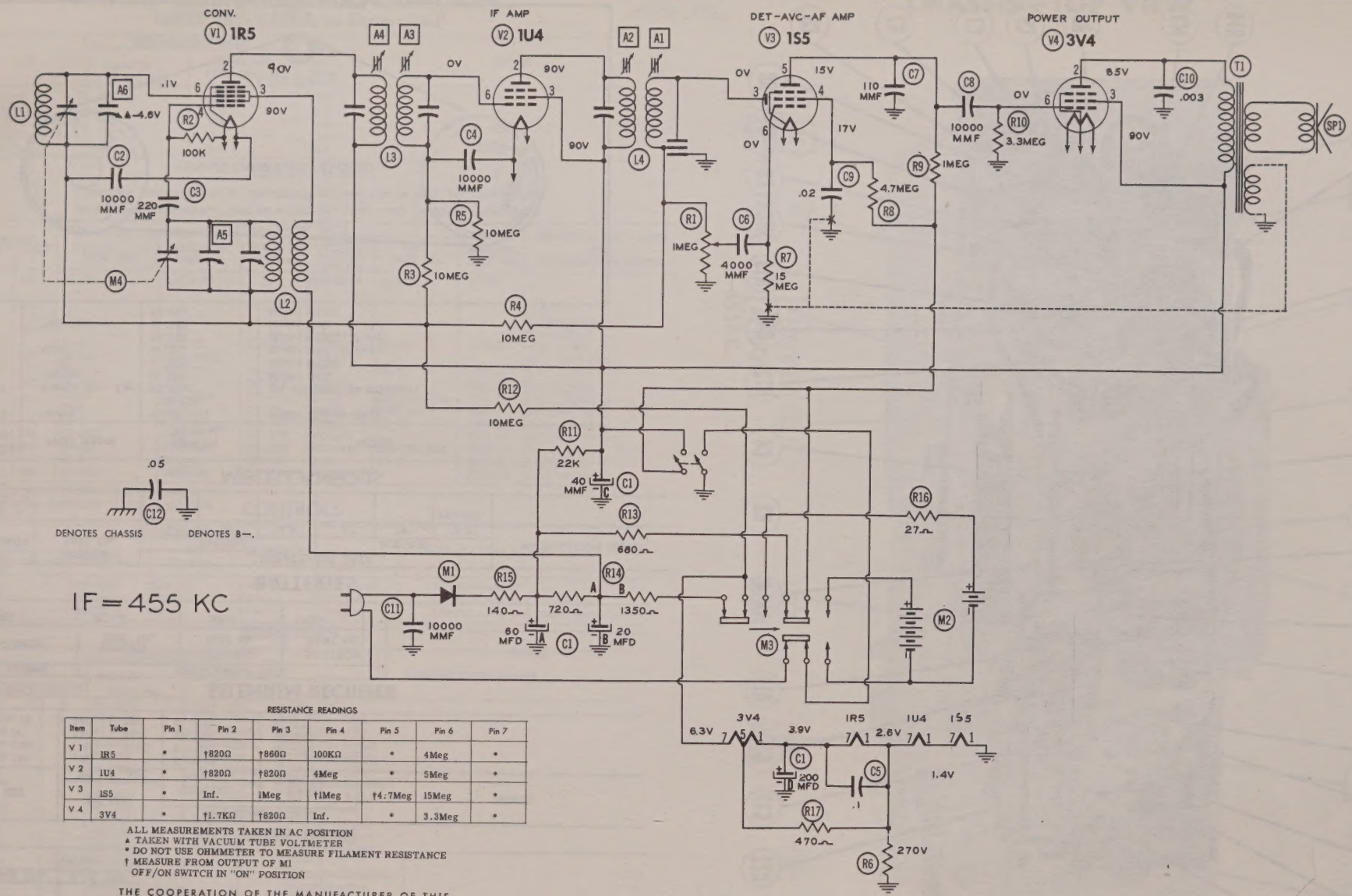
ITEM No.	PART NAME	ZENITH PART No.	NOTES
M3	Switch	85-511 (or) 85-450	Power Change-Over
M4	2Gange Var. Cap.	22-2287	(34-512MMF, 38-212MMF)
	Cabinet	14-1310	Model H401
	"	14-1316	Model H401G
	Knob	46-915	Model H401 (2 Used)
	"	46-929	Model H401G (2Used)
	Dial Pointer	59-228	Model H401
	"	59-259	Model H401G



CHASSIS—BOTTOM VIEW



ZENITH MODEL H401



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†820Ω	†860Ω	100KΩ	*	4Meg	*
V 2	1U4	*	†820Ω	†820Ω	4Meg	*	5Meg	*
V 3	1S5	*	Inf.	1Meg	†1Meg	†4.7Meg	15Meg	*
V 4	3V4	*	†1.7KΩ	†820Ω	Inf.	*	3.3Meg	*

ALL MEASUREMENTS TAKEN IN AC POSITION
▲ TAKEN WITH VACUUM TUBE VOLTMETER
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE
† MEASURE FROM OUTPUT OF M1
OFF/ON SWITCH IN "ON" POSITION

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1951

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.